

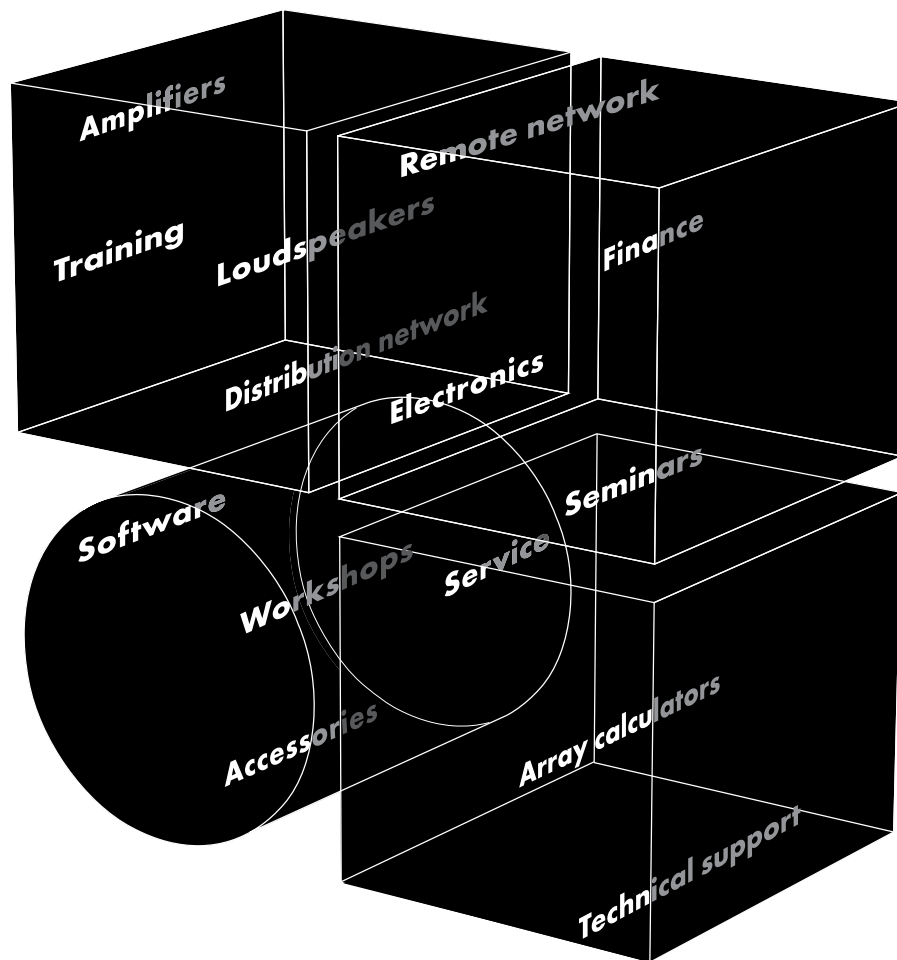
The Q-Series



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The d&b System reality



As the name implies a d&b system is not just a loudspeaker. Nor is it merely a sum of the components: loudspeakers, control electronics, mechanical accessories and remote control. Right from the outset the d&b audiotechnik approach was to build integrated sound reinforcement systems that were more than the sum of their parts. Each element is tightly specified, precisely

aligned and carefully integrated to achieve maximum possible performance, along with neutral sound characteristics. At the same time d&b offers integrated training, technical information, expert service and support, as well as a knowledgeable distribution network, so that the same optimal acoustic result is achieved by every system anywhere, at any time.

The Q-Series

The **Q-Series** embodies the d&b holistic approach to sound reinforcement solutions: integrating loudspeakers, electronics, mechanical deployment assemblies, remote control functions and setup design tools for precise calculation of array performance. Control of dispersion behaviour is a particular fixation at d&b, while at the same time keeping the size and weight of systems to an absolute minimum. The Q-Series maintains the "d&b specific" combination of a neutral, intelligible sound character that is clear and transparent even at high sound pressure levels providing the engineer with an efficient, effortless tool and a neutral platform.

The Q-Series loudspeakers are the perfect option for speech and music in many theatre and presentation situations, live television and orchestral shows, situations where multiple open microphones are used and considerable gain before feedback is an absolute requirement. The transparency, bandwidth, high power and headroom capabilities, also make them ideal for any type of amplified music. The scope of applications is intentionally broad, ranging from single loudspeakers right through to larger multiple cabinet arrays. To this end a variety of technologies are used: conventional rotatable CD horns, dipolar driver arrangements, low compression vented designs with high excursion drivers and toroidal wave shaping devices, all integrated using line array principals.

The **Q** and **Qi** loudspeakers are designed for mobile and installed applications respectively, the Qi versions differing only in cabinet construction and mounting hardware. The Q loudspeakers are designed for a wide range of small to medium scale applications with a clear perspective to provide mobile, flexible, configurable array solutions to the most arduous sound reinforcement situations. The d&b ArrayCalc calculator predicts the performance of arrays, enabling simple and accurate system planning. The Qi loudspeakers are intended for permanently installed performance spaces where the specification is rider driven by the artist or mix engineer's preferences. Both the Q cabinets and mounting hardware can be properly colour matched to interior designs, are mechanically adapted for installation use and can provide protection in climatically hostile environments.

The 2-way passively crossed over **Q1/Qi1**, **Q7/Qi7** and **Q10/Qi10** loudspeaker cabinets sharing the same physical size, shape, rigging and driver compliment. The highest degree of constant directivity is maintained using a large frequency overlap through the crossover range, while the recessed dipolar positioning of the two 10" low frequency drivers mechanically time aligns these with the 1.3" exit HF driver. The Q1/Qi1 HF drivers are

fitted with a toroidal wave shaping device, which have a 75° (h) and 75° x 15° (h x v) dispersion pattern respectively, the resulting curved coherent wave front allows vertical arrays of multiple cabinets to be constructed. The Q7/Qi7 and Q10/Qi10 loudspeakers also use a 1.3" HF driver fitted to rotatable 75° x 40° and 110° x 40° (h x v) constant directivity horns respectively allowing them to be configured for use both vertically or horizontally. When deployed upright, the Q7/Qi7 and Q10/Qi10 are accurate stand-alone full range loudspeakers with vertical directivity control extending approximately one octave below similarly sized biaxial loudspeakers. Their horizontal coverage angles can also be used to fulfil near field or infill functions for Q1/Qi1 arrays, either flown, stacked or ground supported. When deployed horizontally with the horn rotated, the horizontal dispersion control of the Q7/Qi7 is maintained down to approximately 400 Hz. This performance can be used very effectively in critical positions close to open microphones and also allows the Q7/Qi7 loudspeakers to be combined as the near field element in Q1/Qi1 columns.

The **Q**, **Qi** and **QiCSA** subwoofers complete the Series' sharing the same width as the other loudspeakers and having compatible flying fittings that enable their use in columns with Q and Qi loudspeakers respectively. The Q, Qi and QiCSA-SUB cabinets are bass-reflex designs with an 18" high excursion driver. Multiples of three Q-SUBs or two Qi-SUBs and one QiCSA-SUB can be combined to produce Cardioid Subwoofer Arrays (CSA) when driven by the D6 or D12 amplifier. The D12 amplifier incorporates d&b SenseDrive technology for accurate control of LF driver membranes.

The d&b **D6** and **D12** dual channel amplifiers realize the complete system. They provide two different power ranges, incorporate d&b loudspeaker specific configuration information and have analog and digital signal inputs and links. These devices are specially designed and manufactured by d&b utilizing Digital Signal Processing and include switchable functions for precisely tailoring system response for a wide variety of applications. A user definable 4-band parametric equalizer and a delay capability is provided in every amplifier channel to reduce the need for external processing devices. The D12 amplifier additionally offers a 2-Way Active mode and a MIX TOP/SUB output configuration, output connector options as well as d&b SenseDrive.

The D6 and D12 amplifiers have **d&b Remote network** interfaces enabling control and monitoring of a large number of system functions and extensive system integration capabilities. d&b Load monitoring and System check are also incorporated to remotely monitor loudspeaker driver status.

The Q-Series



Q1 loudspeaker



Q7, Q10 loudspeaker



Q subwoofer



Qi1 loudspeaker



Qi7, Qi10 loudspeaker



Qi, QiCSA subwoofer



D6 amplifier



D12 amplifier

The Q1 and Qi1 loudspeakers

Q1 and Qi1 loudspeakers

The Q1 and Qi1 are line array loudspeakers for use in vertical columns. The Qi1 is the installation version of the Q1 loudspeaker, it differs only in cabinet construction and mounting hardware. The Q1 and Qi1 cabinets are passive 2-way designs that houses 2 x 10" LF drivers and a 1.3" HF compression driver with a toroidal waveshaping device to achieve a 75° horizontal dispersion characteristic. The two 10" neodymium LF drivers are positioned in a dipolar arrangement providing an exceptional dispersion control even at lower frequencies, with the 75° nominal dispersion angle being maintained down to 400 Hz.

Q1 and Qi1 cabinets can be combined with the respective Q and Qi subwoofer systems: in mixed line array setups, as a separate subwoofer column or in ground stacked applications. For further extension of bandwidth and headroom ground stacked J-INFRA subwoofers can be used.

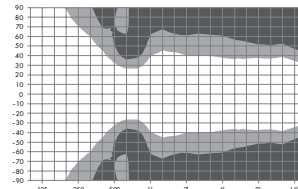
The Q1 and Qi1 cabinets are constructed from marine plywood and have an impact resistant paint finish. The front of the loudspeaker cabinets are covered with a replaceable acoustically transparent foam and protected by a rigid metal grill. Four M10 threaded inserts on each side panel of the Qi1 cabinet enclosure are provided for attaching installation hardware whilst the Q1 cabinet incorporates a pair of handles and has integrated line array rigging hardware.

System data

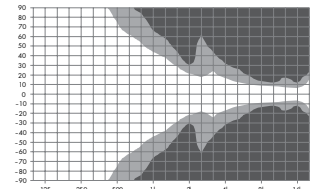
Frequency response (-5 dB standard)	60 Hz - 17 kHz
Frequency response (-5 dB CUT mode)	100 Hz - 17 kHz
Max. sound pressure (1 m, free field) ¹	
with D6	135 dB
with D12	139 dB
Input level (100 dB SPL/1 m)	-18 dBu

Loudspeaker data

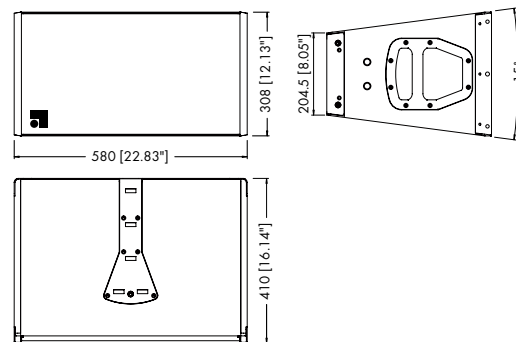
Nominal impedance	8 ohms
Power handling capacity (RMS/peak 10 ms)	400/1600 W
Nominal dispersion angle (h)	75°
Components	2 x 10" driver/1.3" compression driver
	passive crossover network
Connections Q1	2 x EP5, 2 x NL4 or 2 x NLT4 F/M
Connections Qi1	2 x NL4
Pin assignments	
EP5	1/2
NL4 and NLT4 F/M	1+/1-
Weight Q1/Qi1	22/21 kg (49/46 lb)



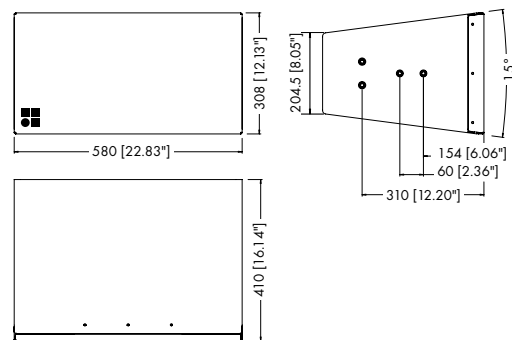
Q1 and Qi1 horizontal dispersion characteristics²



Q1 and Qi1 vertical dispersion characteristics²



Q1 cabinet dimensions in mm (inch)



Qi1 cabinet dimensions in mm (inch)

¹ Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

² Dispersion angle vs frequency plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB

The Q7 and Qi7 loudspeakers

Q7 and Qi7 loudspeakers

The Q7 and Qi7 are full range loudspeakers. The Qi7 is the installation version of the Q7 loudspeaker, it differs only in cabinet construction and mounting hardware.

The Q7 and Qi7 are 75° x 40° passive 2-way cabinets housing 2 x 10" LF drivers and a 1.3" HF compression driver with a rotatable constant directivity horn and a passive crossover network. The two 10" neodymium LF drivers are positioned in a dipolar arrangement providing exceptional vertical dispersion control with the 40° nominal angle being maintained down to 400 Hz. The precisely controlled 75° horizontal dispersion performance provides the ideal pattern for many medium throw requirements. The horn can be rotated by 90°.

The Q7 and Qi7 can be used as stand-alone full range systems in combinations with other Q and Qi loudspeakers, ground stacked or mounted on a high stand. Q7 and Qi7 cabinets can also be combined in flown array systems.

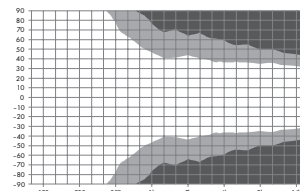
The Q7 and Qi7 cabinets are constructed from marine plywood and have an impact resistant paint finish. The front of the loudspeaker cabinets are covered with a replaceable acoustically transparent foam and protected by a rigid metal grill. Four M10 threaded inserts on each side panel of the Qi7 cabinet enclosure are provided for attaching installation hardware whilst the Q7 cabinet incorporates a pair of handles and has integrated line array rigging hardware.

System data

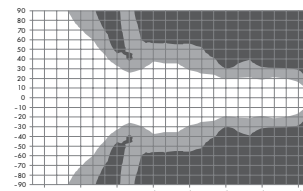
Frequency response (-5 dB standard)	60 Hz - 17 kHz
Frequency response (-5 dB CUT mode)	100 Hz - 17 kHz
Max. sound pressure (1 m, free field) ¹	
with D6	134 dB
with D12	138 dB
Input level (100 dB SPL/1 m)	-17 dBu

Loudspeaker data

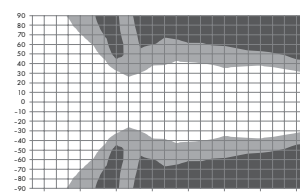
Nominal impedance	8 ohms
Power handling capacity (RMS/peak 10 ms)	400/1600 W
Nominal dispersion angle (h x v)	75° x 40°
Components	2 x 10" driver/1.3" compression driver
.....	passive crossover network
Connections Q7	2 x EP5, 2 x NL4 or 2 x NLT4 F/M
Connections Qi7	2 x NL4
Pin assignments	
EP5	1/2
NL4 and NLT4 F/M	1+/1-
Weight Q7/Qi7	22/21 kg (49/46 lb)



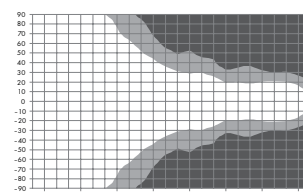
Q7 and Qi7 horizontal dispersion characteristics²



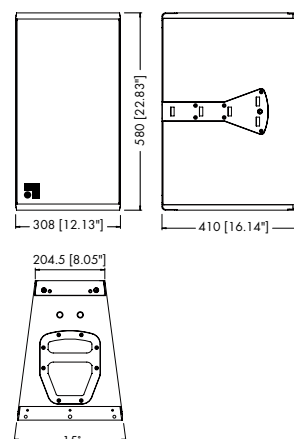
Q7 and Qi7 vertical dispersion characteristics²



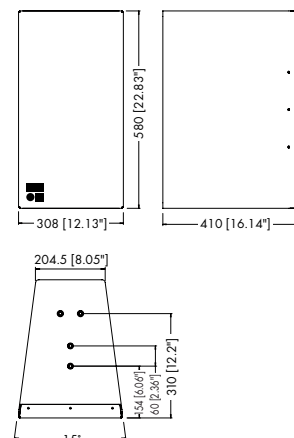
Q7 and Qi7 horizontal dispersion characteristics/rotated horn²



Q7 and Qi7 vertical dispersion characteristics/rotated horn²



Q7 cabinet dimensions in mm (inch)



Qi7 cabinet dimensions in mm (inch)

¹ Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

² Dispersion angle vs frequency plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB

The Q10 and Qi10 loudspeakers

Q10 and Qi10 loudspeakers

The Q10 and Qi10 are full range loudspeakers. The Qi10 is the installation version of the Q10 loudspeaker, it differs only in cabinet construction and mounting hardware.

The Q10 and Qi10 are 110° x 40° passive 2-way cabinets housing 2 x 10" LF drivers and a 1.3" HF compression driver with a rotatable constant directivity horn and a passive crossover network. The two 10" neodymium LF drivers are positioned in a dipolar arrangement providing exceptional vertical dispersion control with the 40° nominal angle being maintained down to 400 Hz.

Q10 and Qi10 can be used as stand-alone full range systems, in combinations with other Q and Qi cabinets ground stacked or mounted on a high stand. The wide constant directivity performance provides remarkable transparency when used in close proximity to listeners. It is also ideally suited to ambient and distributed sound reinforcement tasks. When used in the upright configuration the Q10 and Qi10 have a very accurate 110° horizontal constant directivity behaviour that is maintained down to approximately 800 Hz.

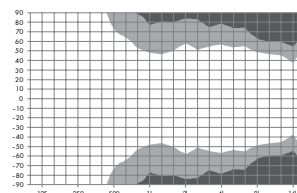
The Q10 and Qi10 cabinets are constructed from marine plywood and have an impact resistant paint finish. The front of the loudspeaker cabinets are covered with a replaceable acoustically transparent foam and protected by a rigid metal grill. Four M10 threaded inserts on each side panel of the Qi10 cabinet enclosure are provided for attaching installation hardware whilst the Q10 cabinet incorporates a pair of handles and has integrated rigging hardware.

System data

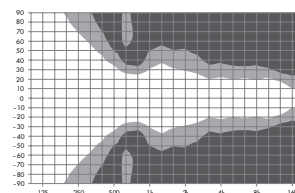
Frequency response (-5 dB standard)	60 Hz - 17 kHz
Frequency response (-5 dB CUT mode).....	100 Hz - 17 kHz
Max. sound pressure (1 m, free field) ¹	
with D6	133 dB
with D12	137 dB
Input level (100 dB SPL/1 m)	-17 dBu

Loudspeaker data

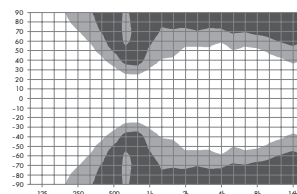
Nominal impedance.....	8 ohms
Power handling capacity (RMS/peak 10 ms)	400/1600 W
Nominal dispersion angle (h x v)	110° x 40°
Components.....	2 x 10" driver/1.3" compression driver
.....	passive crossover network
Connections Q10	2 x EP5, 2 x NL4 or 2 x NLT4 F/M
Connections Qi10	2 x NL4
Pin assignments.....	
EP5	1/2
NL4 and NLT4 F/M	1+/1-
Weight Q10/Qi10	22/21 kg (49/46 lb)



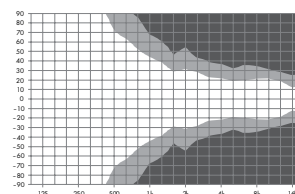
Q10 and Qi10 horizontal dispersion characteristics²



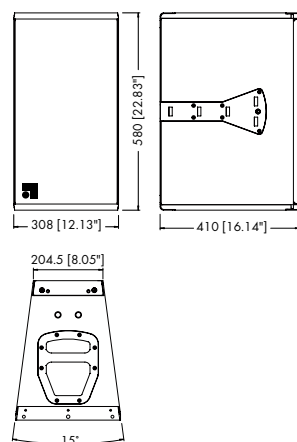
Q10 and Qi10 vertical dispersion characteristics²



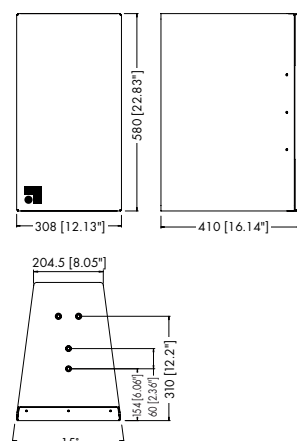
Q10 and Qi10 horizontal dispersion characteristics/rotated horn²



Q10 and Qi10 vertical dispersion characteristics/rotated horn²



Q10 cabinet dimensions in mm (inch)



Qi10 cabinet dimensions in mm (inch)

¹ Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

² Dispersion angle vs frequency plotted using lines of equal sound pressure (isobars) at -6 dB and -12 dB

The Q, Qi and QiCSA subwoofers

Q, Qi and QiCSA subwoofers

Q, Qi and QiCSA-SUB are the dedicated subwoofers for the Q and Qi loudspeakers respectively and can be used to supplement the top cabinets in various combinations, either flown or ground stacked. The Qi and QiCSA are the installation versions of the Q subwoofer, they differ only in cabinet construction and mounting hardware. They are actively driven bass-reflex designs housing a long excursion 18" driver.

The subwoofers can be combined with the respective Q and Qi loudspeakers in line arrays, as a separate column or in ground stacked applications where the subwoofers also mechanically support the top loudspeakers.

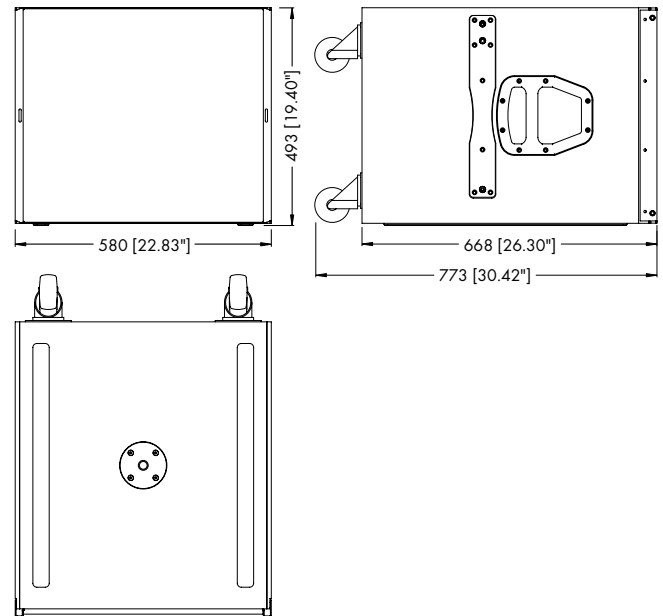
The Q, Qi and QiCSA subwoofer cabinets are constructed from marine plywood and have an impact resistant paint finish. The front of the subwoofer cabinets are covered with a replaceable acoustically transparent foam and protected by a rigid metal grill. The QiCSA-SUB cabinet has foams fitted to both the front and rear sides of the cabinet, the grill facing backwards is fitted with a single NL4 connector (see page 15). Four M10 threaded inserts on each side panel of the Qi and QiCSA-SUB enclosure are provided for attaching installation hardware whilst the Q-SUB cabinet incorporates a pair of handles, an M20 threaded flange in the top panel and has integrated line array rigging hardware.

System data

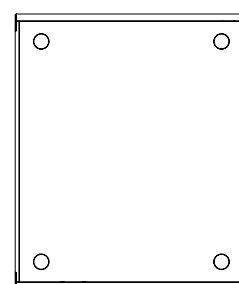
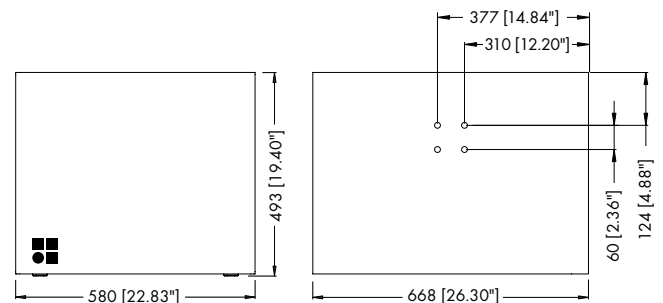
Frequency response (-5 dB standard)	40 Hz - 130 Hz
Frequency response (-5 dB 100 Hz mode)	40 Hz - 100 Hz
Max. sound pressure (1 m, free field) ¹	
with D6	129 dB
with D12	133 dB

Loudspeaker data

Nominal impedance	8 ohms
Power handling capacity (RMS/peak 10 ms)	400/1600 W
Components	18" driver
Connections Q-SUB	2 x EP5, 2 x NL4 or 2 x NLT4 F/M
Connections Qi/QiCSA-SUB	2 x NL4/1 x NL4
Pin assignments	
EP5	3/4, SenseDrive: 5
NL4 and NLT4 F/M	2+/2-
Weight Q/Qi/QiCSA	42/37/40 kg (92.6/81/88 lb)



Q-SUB cabinet dimensions in mm (inch)



Qi and QiCSA-SUB cabinet dimensions in mm (inch)

¹ Broadband measurement, pink noise, crest factor 4, peak measurement, linear weighting

The Q1 rigging system

Safety approval

d&b loudspeakers and accessories are designed for set up and use within situations requiring compliance with the provisions and directives of BGV C1 Rule for the Prevention of Accidents.



Z5154 Q Rigging set:

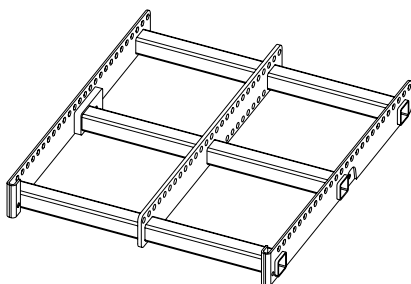
**Z5151
Q Splay link**



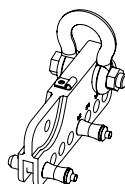
**Z5152
Q Front link**



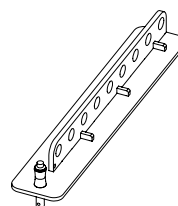
**Z5153
Locking pins 8 mm**



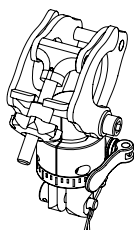
**Z5159
Q Flying frame**
WLL: 480 kg/1058 lb
or twenty Q1 loudspeakers



**Z5160
Q Load adapter**
WLL: 480 kg/1058 lb
or twenty Q1 loudspeakers;
aiming of a column by 1/1,
1/2 or 1/4 detents



**Z5156
Q Flying adapter**
For three Q1 loudspeakers
maximum



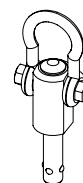
**Z5147
Rota clamp**
WLL: 500 kg/1100 lb;
for a tube diameter up to
51 mm/2"



**Z5155
Q Hoist connector chain**
WLL: 480 kg/1058 lb
or twenty Q1 loudspeakers



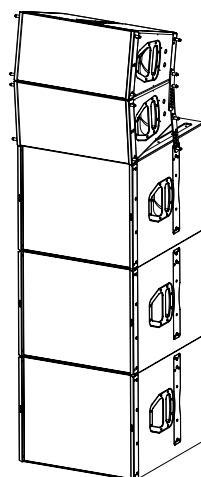
**E6507
1t Shackle**



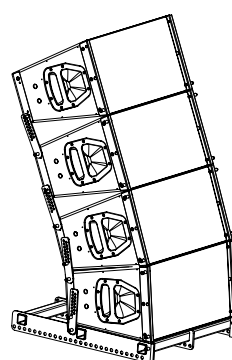
**Z5048
Flying pin 10 mm**

The Q1 rigging examples

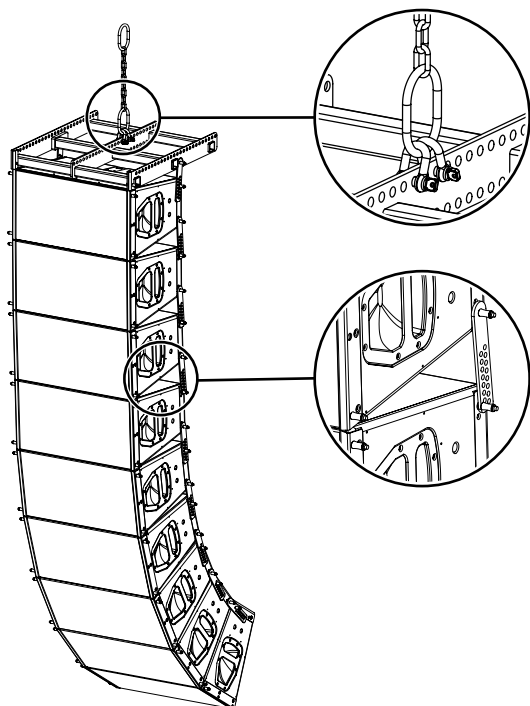
With a 15° vertical HF dispersion per cabinet, the Q1 can be used to construct vertical columns that produce a curved coherent wave front. The mechanical and acoustical design of the cabinet enables vertical splay angles to be set between 0° and 14°. Q1 cabinets can therefore be used in vertical configurations starting from two cabinets with a 15° to 30° dispersion, up to twenty cabinets with a fully user and venue defined vertical profile. For further information please refer to the T1 385 d&b Line array design and Q-Series Rigging manual, which are available for download at www.dbaudio.com.



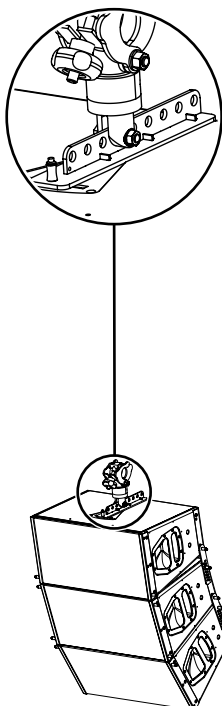
**Q1/Q-SUB ground stack with
Z5154 Q Rigging set**



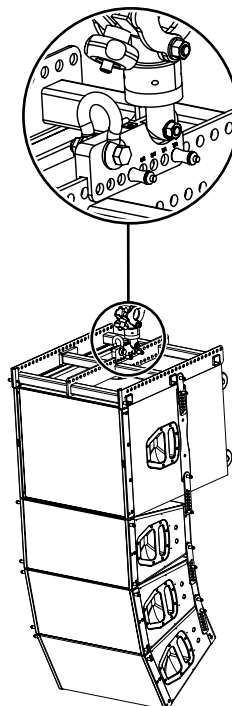
**Q1 ground stack with
Z5159 Q Flying frame
Z5154 Q Rigging set**



**Q1 line array with
Z5159 Q Flying frame
Z5154 Q Rigging set
Z5155 Q Hoist connector chain
E6507 1t Shackles**



**Q1 array with
Z5156 Q Flying adapter
Z5154 Q Rigging set
Z5147 Rota clamp**

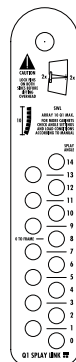


**Q1/Q-SUB array with
Z5159 Q Flying frame
Z5154 Q Rigging set
Z5147 Rota clamp
Z5160 Q Load adapter**

The Q7/Q10 mounting accessories

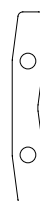
Safety approval

d&b loudspeakers and accessories are designed for set up and use within situations requiring compliance with the provisions and directives of BGV C1 Rule for the Prevention of Accidents.



Z5154 Q Rigging set:

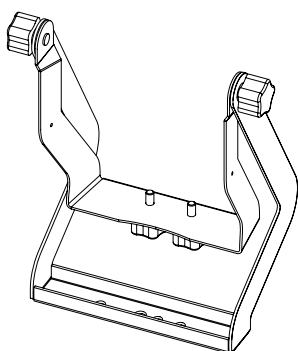
**Z5151
Q Splay link**



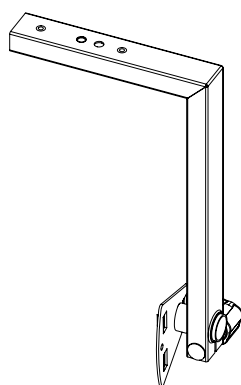
**Z5152
Q Front link**



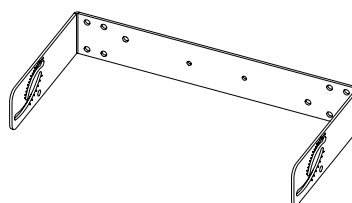
**Z5153
Locking pins 8 mm**



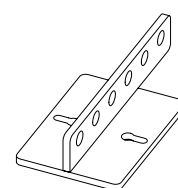
**Z5161
Q Flying bracket**



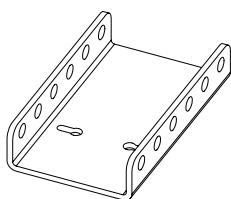
**Z5150
Q Swivel bracket**



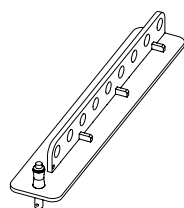
**Z5175
Qi Horizontal bracket**



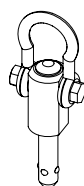
**Z5020
Flying adapter 02**



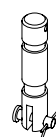
**Z5025
Flying adapter 03**



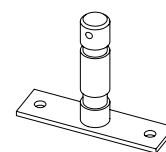
**Z5156
Q Flying adapter**
For three Q7 loudspeakers
maximum



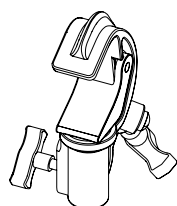
**Z5048
Flying pin 10 mm**



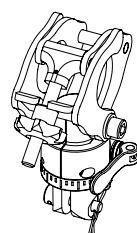
**Z5015
TV spigot 02**



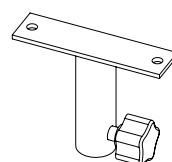
**Z5010
TV spigot with
fixing plate**



**Z5012
Pipe clamp for TV spigot**
WLL: 100 kg/220 lb;
for a tube diameter up to
70 mm/2.75"



**Z5147
Rota clamp**
WLL: 500 kg/1100 lb;
for a tube diameter up to
51 mm/2"



**Z5024
Loudspeaker
stand adapter**

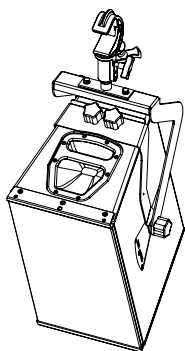


**E6507
1t Shackle**

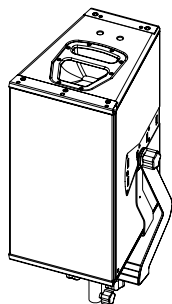


**Q9032
Safety eyebolt M10**

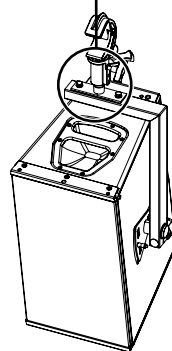
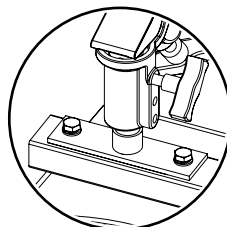
The Q7/Q10 mounting examples



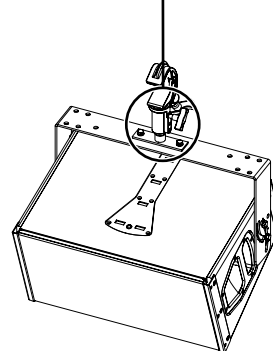
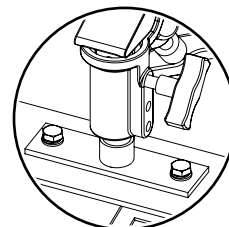
**Q7/Q10 with
Z5161 Q Flying bracket
Z5010 TV spigot with fixing plate
Z5012 Pipe clamp for TV spigot**



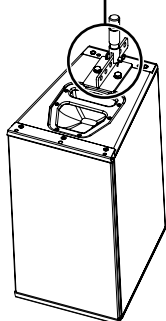
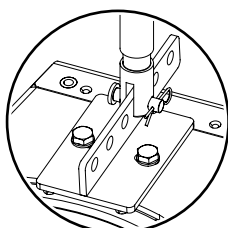
**Q7/Q10 with
Z5161 Q Flying bracket
Z5024 Loudspeaker
stand adapter**



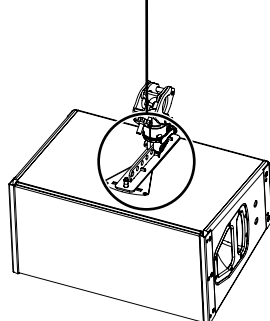
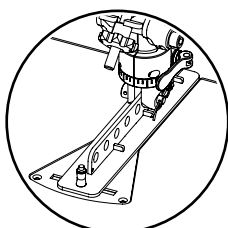
**Q7/Q10 with
Z5150 Q Swivel bracket
Z5010 TV spigot with fixing plate
Z5012 Pipe clamp for TV spigot**



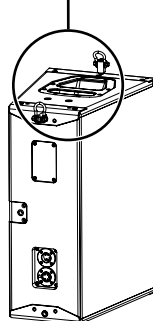
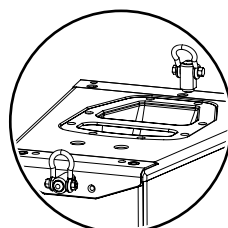
**Q7/Q10 with
Z5175 Qi Horizontal bracket
Z5010 TV spigot with fixing plate
Z5012 Pipe clamp for TV spigot**



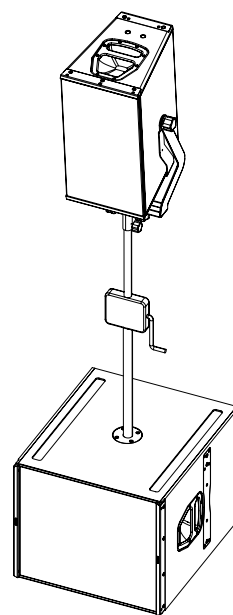
**Q7/Q10 with
Z5020 Flying adapter 02
Z5015 TV spigot 02**



**Q7/Q10 with
Z5156 Q Flying adapter
Z5147 Rota clamp**



**Q7/Q10 with
Z5048 Flying pins 10 mm**

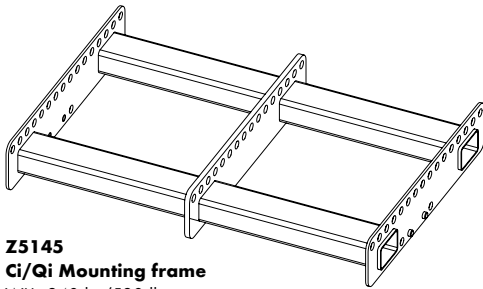


**Q7/Q10 and Q-SUB with
Z5161 Q Flying bracket
Z5013 Loudspeaker stand
winder M20**

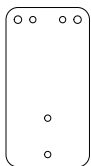
The Qi rigging system

Safety approval

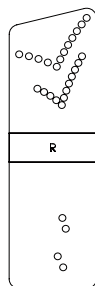
d&b loudspeakers and accessories are designed for set up and use within situations requiring compliance with the provisions and directives of BGV C1 Rule for the Prevention of Accidents.



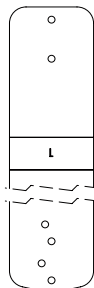
Z5145
Ci/Qi Mounting frame
WLL: 240 kg/530 lb
e.g. nine Q loudspeakers



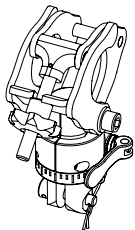
Z5170
Qi Mounting adapter



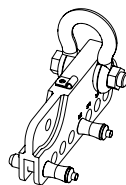
Z5171
Qi Mounting plate



Z5172
Qi-SUB
Mounting plate



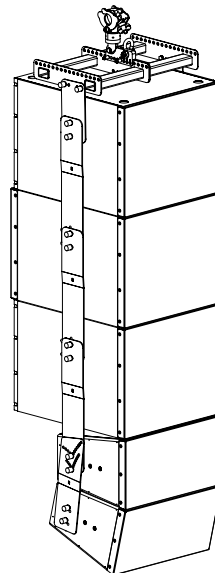
Z5147
Rota clamp
WLL: 500 kg/1100 lb;
for a tube diameter up to
51 mm/2"



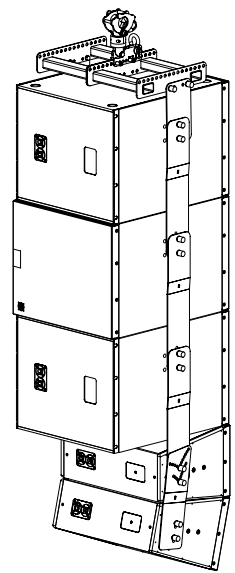
Z5160
Q Load adapter
WLL: 480 kg/1058 lb
or 20 Qi1 loudspeakers;
aiming of a column by 1/1,
1/2 or 1/4 detents

The Qi1 rigging examples

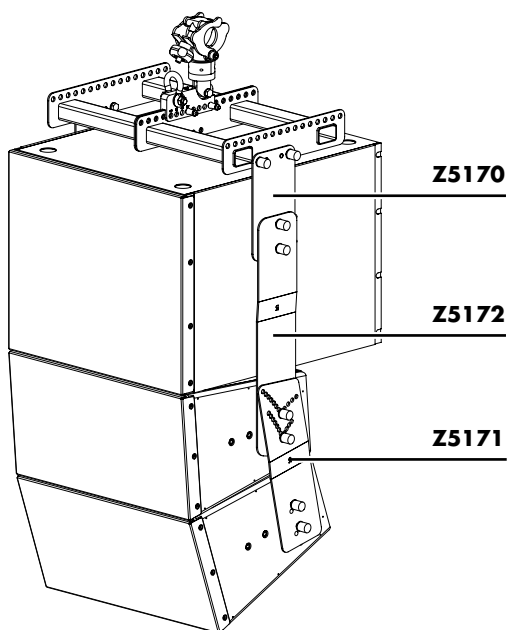
With a 15° vertical HF dispersion per cabinet, the Qi1 can be used to construct vertical columns that produce a curved coherent wave front. The mechanical and acoustical design of the cabinet enables vertical splay angles to be set between 0° and 14°. Qi1 cabinets can therefore be used in vertical configurations starting from two cabinets with a 15° to 30° dispersion, up to nine cabinets with a fully user and venue defined vertical profile. Qi subwoofers can be integrated at any position within the array. Three subwoofers can be mounted together in CSA mode, where the centre QiCSA-SUB radiates to the back. For further information please refer to the TI 385 d&b Line array design, which is available for download at www.dbaudio.com.



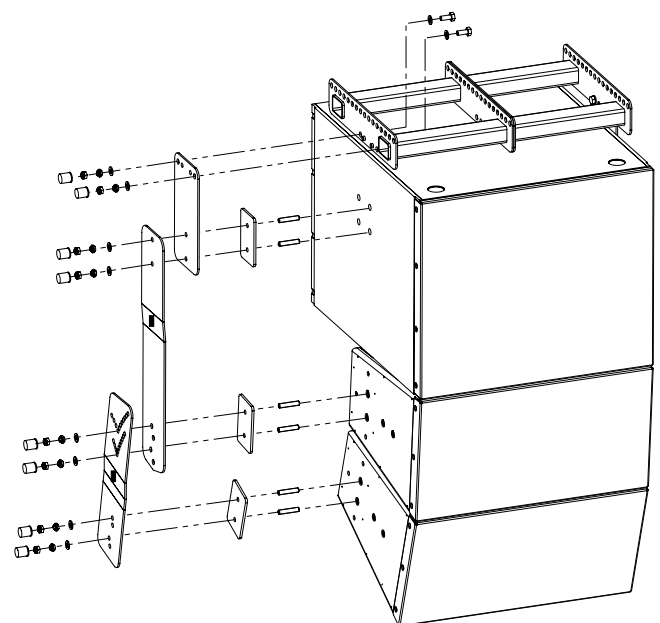
**Qi-SUB/QiCSA-SUB
Cardioid Subwoofer Array
front view**



**Qi-SUB/QiCSA-SUB
Cardioid Subwoofer Array
back view**



**Flown Qi1/Qi-SUB array with
Z5145 Ci/Qi Mounting frame
Z5160 Q Load adapter
Z5147 Rota clamp
Z5170 Qi Mounting adapter
Z5171 Qi Mounting plate
Z5172 Qi-SUB Mounting plate**



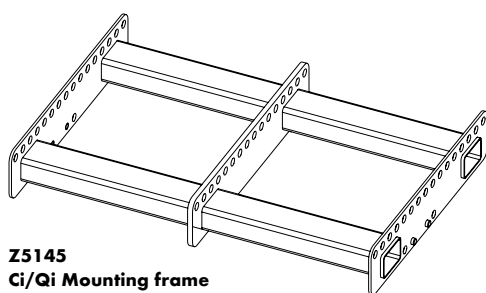
Qi rigging system

The Qi rigging system

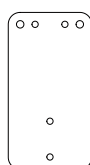
The Qi7/Qi10 rigging examples

Safety approval

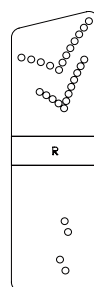
d&b loudspeakers and accessories are designed for set up and use within situations requiring compliance with the provisions and directives of BGV C1 Rule for the Prevention of Accidents.



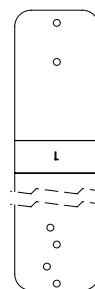
Z5145
Ci/Qi Mounting frame
WLL: 240 kg/530 lb



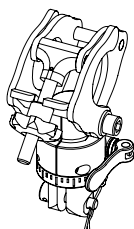
Z5170
Qi Mounting adapter



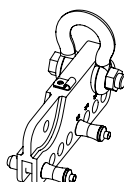
Z5171
Qi Mounting plate



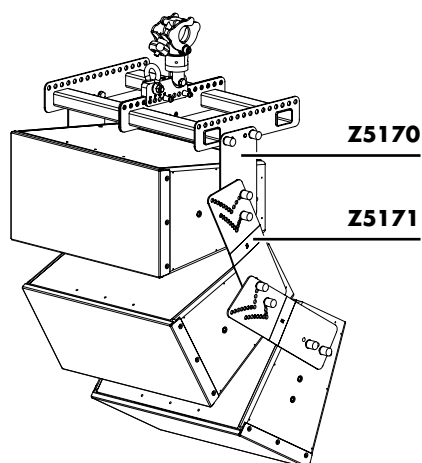
Z5172
Qi-SUB
Mounting plate



Z5147
Rota clamp
WLL: 500 kg/1100 lb;
for a tube diameter up to
51 mm/2"



Z5160
Q Load adapter
WLL: 480 kg/1058 lb;
aiming of a column by 1/1,
1/2 or 1/4 detents

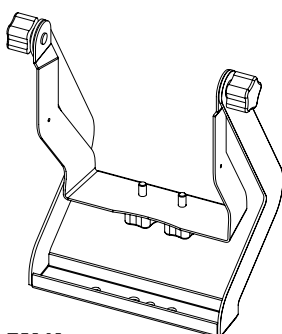


Flown Qi7/Qi10 array with
Z5145 Ci/Qi Mounting frame
Z5160 Q Load adapter
Z5147 Rota clamp
Z5170 Qi Mounting adapter
Z5171 Qi Mounting plate

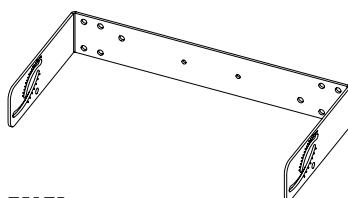
The Qi7/Qi10 mounting and rigging accessories and examples

Safety approval

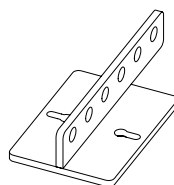
d&b loudspeakers and accessories are designed for set up and use within situations requiring compliance with the provisions and directives of BGV C1 Rule for the Prevention of Accidents.



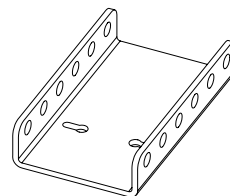
Z5161
Q Flying bracket



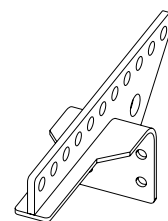
Z5175
Qi Horizontal bracket



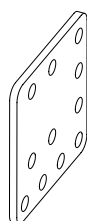
Z5020
Flying adapter 02



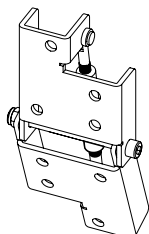
Z5025
Flying adapter 03



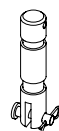
Z5054
Ci60/Ci90
Flying adapter



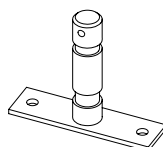
Z5044
MAX Bracket
connector



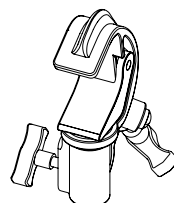
Z5053
Ci60/Ci90 Bracket
connector



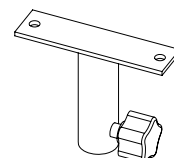
Z5015
TV spigot 02



Z5010
TV spigot with
fixing plate



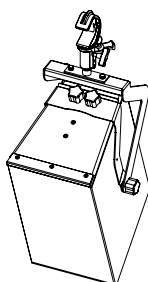
Z5012
Pipe clamp for TV spigot
WLL: 100 kg/220 lb;
for a tube diameter up to
70 mm/2.75"



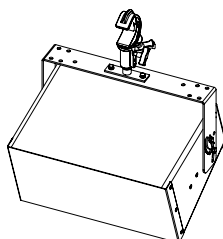
Z5024
Loudspeaker
stand adapter



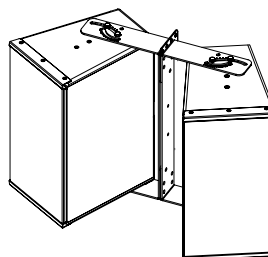
E6507
1t Shackle



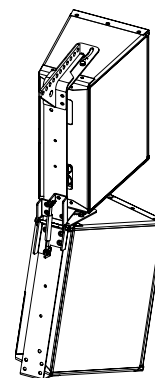
Qi7/Qi10 with
Z5161 Q Flying bracket
Z5010 TV spigot with fixing plate
Z5012 Pipe clamp for TV spigot



Qi7/Qi10 with
Z5175 Qi Horizontal bracket
Z5010 TV spigot with fixing plate
Z5012 Pipe clamp for TV spigot



Qi7/Qi10 horizontal array with
Z5175 Qi Horizontal bracket
Z5044 MAX Bracket connector



Qi7/Qi10 vertical array with
Z5054 Ci60/Ci90 Flying adapter
Z5175 Qi Horizontal bracket
Z5053 Ci60/Ci90 Bracket connector

The d&b ArrayCalc calculator

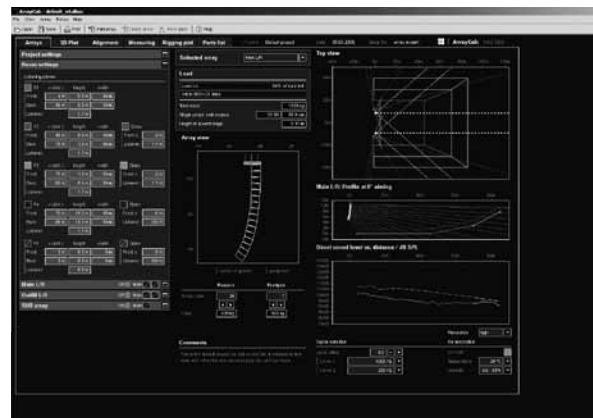
For both acoustic and safety reasons d&b line arrays must be designed using the d&b ArrayCalc simulation tool. It is available as a native stand-alone application for both Microsoft Windows¹ (XP or higher) and Mac OS X² (10.4.10 or higher) operating systems.

ArrayCalc is the system engineer's comprehensive toolbox for all tasks regarding acoustic design, performance prediction, alignment, rigging and safety parameters of the d&b line array systems and subwoofer arrays. In combination with the d&b Remote network, this can significantly reduce setup and tuning time in mobile applications, and allows for precise initial simulations in the planning of installations. EASE and DXF data export capabilities make for easy data transfer.

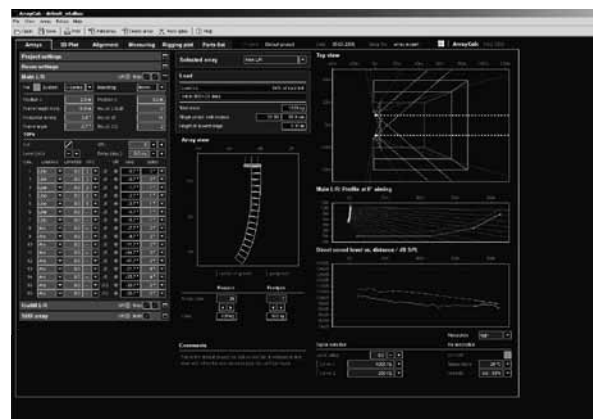
The program allows the user to define up to five three-dimensional listening planes to quickly create a representation of the audience areas in a given venue, including balconies, side stalls and in-the-round scenarios. Special functions assist in obtaining the proper dimensions with laser distance finders and inclinometers.

Additionally, up to two acoustic obstacles representing for example video cubes, which will obstruct the sound propagation, can be added to the model. Up to fourteen flown arrays or subwoofer columns can be defined in a project file as single hangs or in pairs, as well as a ground stacked subwoofer array consisting of up to twenty five stacks. They can be freely positioned according to their intended application, for example as main hang, outfill, delay line etc. Position, orientation, coverage and aiming are displayed in top and side views. For every array, achievable RMS level over distance is calculated with high resolution in real time, for either band-limited or broadband input signals. The comprehensive simulation precisely models the actual performance of the system, taking into account input level, all system configuration options (such as CUT, CPL, HFC or INFRA), limiter activity and air absorption. Acoustic shadowing, whether by obstacles (if defined) or a balcony overhang is also calculated. The load status of all rigging components is also constantly monitored and displayed to determine whether a given array is within the load tolerance.

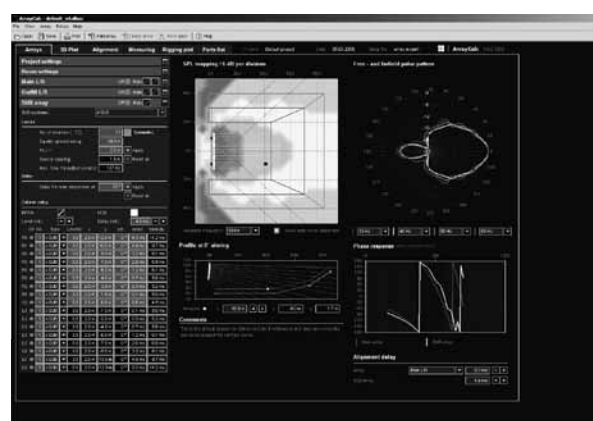
Subwoofer array design is assisted by coverage and polar plot prediction. A specialized algorithm allows the user to specify subwoofer positions and a coverage angle, which is then converted into appropriate delay times that result in the desired dispersion. The program allows the simulation of different arrays to be delayed to one another as well as showing arrival times and SPL



Room Settings



Arrays



Sub Array

The d&b ArrayCalc calculator

at a freely definable reference point on one of the audience areas.

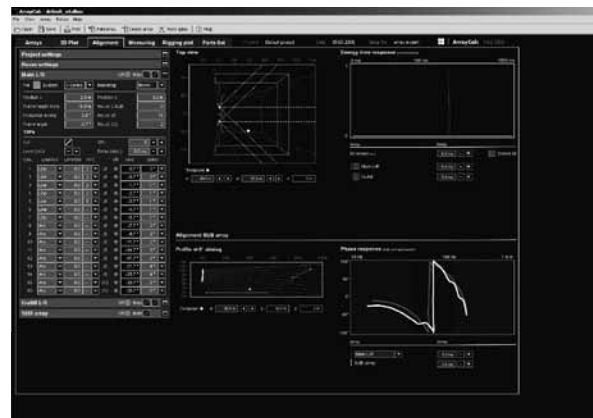
For alignment of the flown system with the ground stacked bass array, the phase response of both the bass array and a selectable flown array is calculated at a definable reference point. Both simulations reflect changes in delay time to the single arrays in real time, greatly obviating the need for time consuming acoustic measurements to that end.

The level distribution resulting from the interaction of all active arrays can be mapped onto the previously defined audience areas in a three-dimensional view which can also be zoomed, rotated and exported as a graphics file. Up to four different configurations and their mappings can be temporarily stored for comparison.

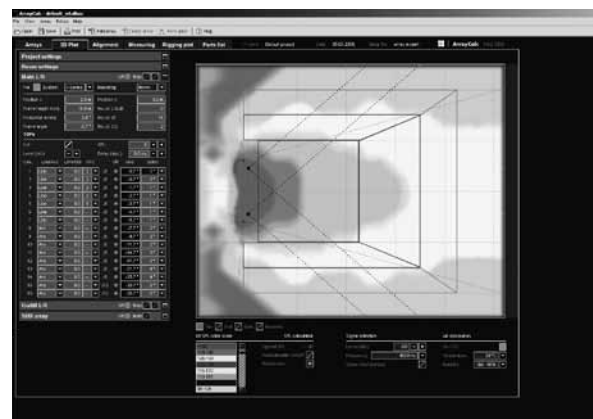
A comprehensive rigging plot with all necessary coordinates, dimensions and weights is automatically generated for export and printing, as well as a parts list detailing all the loudspeakers and rigging components required.

Using the R1 export function, a project file for the R1 remote control software is generated containing the amplifiers (devices) and all groups and control elements to operate the system simulated in ArrayCalc. At the same time it saves the respective amplifier settings in an R1 control settings file for later retrieval. This workflow sequence removes the need to manually transfer configuration information from one software to the other.

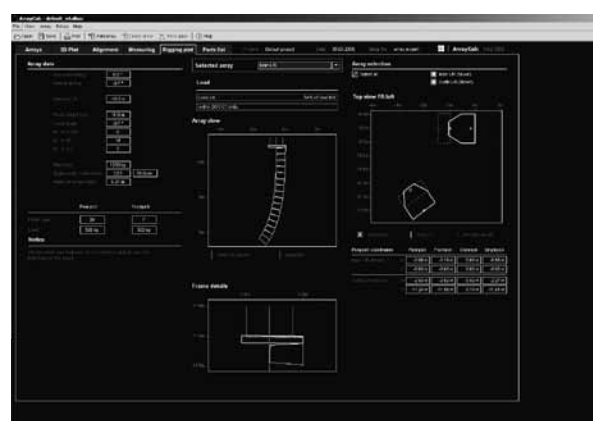
Further information and useful guidelines are provided in the T1 385 d&b Line array design, which is available for download at www.dbaudio.com.



Alignment



3D Plot



Rigging Plot

¹ Microsoft Windows is a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries

² Mac OS is a trademark of Apple Inc., registered in the U.S. and other countries

The D6 and D12 amplifiers

The D6 and D12 are dual channel amplifiers developed and manufactured by d&b utilizing Digital Signal Processing (DSP) to incorporate loudspeaker specific configuration information and functions. These are designed for use with d&b loudspeakers, have both digital and analog signal inputs as well as link outputs, remote control and monitoring capabilities and switch mode power supplies. The level control incorporates a digital rotary encoder enabling selection of all operating modes in conjunction with a Liquid Crystal Display (LCD).

Loudspeaker specific configurations for current d&b loudspeakers and a linear mode are contained within them, the exception being that the D6 does not include 2-Way Active, V-Series and B2-SUB configurations.

The digital elements of the D6 and D12 are specified and constructed to achieve the best possible audio performance while maintaining a very low latency of 0.3 msec. The Digital Signal Processing is used to provide the loudspeaker specific configurations, sophisticated protection circuits modelling thermal and mechanical driver behaviour, and switch functions.

User definable equalization and delay functions are incorporated in each channel of the amplifiers and can be used for applications such as front fills or under balcony delays without the need for external processors. The signal delay capability allows delay settings of up to 340 msec. (= 100 m/328 ft) to be applied independently to each channel as can the 4-band parametric equalizer, providing optional Boost/Cut or Notch filtering. A signal generator offering pink noise or sine wave program is also incorporated for test and alignment purposes. Every unit can be given a unique Device Name to simplify identification and a password protected LOCK function is also incorporated to prevent unauthorized changes.

The D6 and D12 amplifiers also detect incoming Pilot signals at its input (Input monitoring) and can use Load monitoring and System check functions to determine the status of the loudspeaker impedance. d&b System check is designed to verify that the system performs within a predefined condition and can be used to report the system condition after a show.

d&b Load monitoring, on the other hand, enables automatic and continuous impedance monitoring and along with Input monitoring is designed for incorporation within applications specified to the requirements stated in the International Standard IEC 60849 'Sound Systems for Emergency Purposes'. Both can determine the status of an LF or HF driver in systems with multiple elements, even if these are crossed over passively.

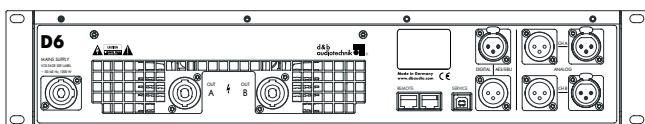
The D6 utilizes a switch mode power supply with PFC suitable for mains supply voltages 100 V/115 V/200 V/230 V, 50 - 60 Hz whilst the D12 utilizes an autosensing switch mode power supply for mains voltages 115/230 V, 50 - 60 Hz (optional 100/200 V). Both power supplies have overvoltage protection and each amplifier has a temperature and signal controlled fan to cool the internal assemblies.

The 2 RU lightweight D6 is specifically designed to deliver medium power into low impedance loads between 4 and 16 ohms. The 3 RU D12 is specifically designed to produce high power into low impedance loads, typically those between 4 and 16 ohms. Due to differences in impedance response against frequency, the maximum number of cabinets driven by each D12 channel varies depending on the loudspeaker type.

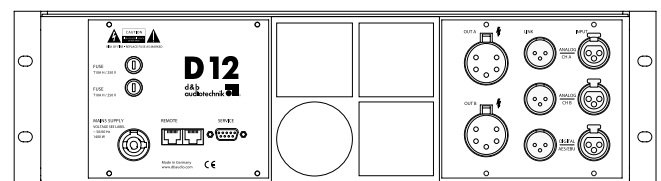
Apart from selectable output configurations for dual channel, Mix TOP/SUB and 2-Way Active mode, the D12 also provides d&b SenseDrive for use with the LF drivers in d&b active loudspeakers and subwoofers.

Both amplifiers house an I/O panel containing: analog signal inputs with link outputs for each channel, an AES/EBU digital input with a link output and NL4 loudspeaker outputs. The D12 I/O panel additionally offers the options of EP5 or NL8 loudspeaker outputs. The two RJ 45 REMOTE sockets at the rear of the D6 and the D12 amplifiers integrate them into the d&b Remote network via CAN-Bus, enabling remote control and/or monitoring.

A USB-B (D6) or a SUB-D9 (D12) SERVICE interface is provided to enable future firmware updates containing new loudspeaker configurations or additional functions to be loaded to the units.



D6 rear view



D12 rear view

The D6 and D12 amplifier data

D6 Display

ISP, GR, OVL A/B.....LED indicators
Liquid Crystal Display (LCD).....Graphic display/120 x 32 Pixel

D6 Controls

POWER, MUTE/LEVEL.....Switch, rotary encoder
Function switches.....Loudspeaker specific circuits
4-band equalizer.....Optional PEQ/Notch
Delay setting.....0.3 - 340 msec. with 0.1 msec. detents
Configurations.....Current d&b loudspeakers and linear mode
.....except 2-Way Active, V-Series and B2-SUB
Frequency generator.....Pink noise or Sine wave

D6 Connectors

INPUT/LINK ANALOG A/B.....3 pin XLR female/male¹
INPUT/LINK DIGITAL AES/EBU.....3 pin XLR female/male¹
Sampling rate.....48 kHz/96 kHz
OUT CHANNEL A/B.....NL4
REMOTE.....2 x RJ 45 parallel
SERVICE.....USB Type B

D6 Protection circuits

Mains inrush current limiter.....1.5 A RMS at 230 V
Loudspeaker switch on delay.....Approx. 2 sec.
Overvoltage protection.....Up to 400 VAC

D6 Data (linear setting with subsonic filter)

Rated output power (THD+N < 0.1%).....
.....2 x 350 W into 8 ohms, both channels are driven
.....2 x 600 W into 4 ohms, both channels are driven
S/N ratio (unweighted, RMS).....>110 dBr

D6 Digital Signal Processing

Sampling rate.....96 kHz/27 Bit ADC/24 Bit DAC
Basic delay/latency analog input.....0.3 msec.

D6 Power supply

Switch mode power supply for.....
.....100/115/200/230V, 50 - 60 Hz
Mains connector.....PowerCon®²

D6 Remote network

Remote network.....CAN-Bus

D6 Dimensions, weight

Height x width x depth.....2 RU x 19" x 353 mm/13.9"
Weight.....8 kg/17.6 lb

D12 Display

ISP, GR, OVL A/B.....LED indicators
Liquid Crystal Display (LCD).....Graphic display/120 x 32 Pixel

D12 Controls

POWER, MUTE/LEVEL.....Switch, rotary encoder
Function switches.....Loudspeaker specific circuits
4-band equalizer.....Optional PEQ/Notch
Delay setting.....0.3 - 340 msec. with 0.1 msec. detents
Configurations.....Current d&b loudspeakers and linear mode
Frequency generator.....Pink noise or Sine wave

D12 Connectors

INPUT/LINK ANALOG A/B.....3 pin XLR female/male¹
INPUT/LINK DIGITAL AES/EBU.....3 pin XLR female/male¹
Sampling rate.....48 kHz/96 kHz
OUT CHANNEL A/B.....Optional EP5/NL4/NL8
REMOTE.....2 x RJ 45 parallel
SERVICE.....SUB-D9 female

D12 Protection circuits

Mains inrush current limiter.....5 A RMS at 230 V
Loudspeaker switch on delay.....Approx. 2 sec.
Overvoltage protection.....Up to 400 VAC

D12 Data (linear setting with subsonic filter)

Rated output power (THD+N < 0.1%).....
.....2 x 750 W into 8 ohms, both channels are driven
.....2 x 1200 W into 4 ohms, both channels are driven
S/N ratio (unweighted, RMS).....>110 dBr

D12 Digital Signal Processing

Sampling rate.....96 kHz/27 Bit ADC/24 Bit DAC
Basic delay/latency analog input.....0.3 msec.

D12 Power supply

Autosensing switch mode power supply for.....
.....115/230 V, 50 - 60 Hz
.....optional 100/200 V, 50 - 60 Hz
Mains connector.....PowerCon®²

D12 Remote network

Remote network.....CAN-Bus

D12 Dimensions, weight

Height x width x depth.....3 RU x 19" x 353 mm/13.9"
Weight.....13 kg/29 lb

¹ XLR pin assignment analog, inputs and links: 1 = GND, 2 = pos. signal, 3 = neg. signal
XLR pin assignment digital, input and link: 1 = GND, 2 = signal, 3 = signal

² PowerCon® is a registered trademark of the Neutrik AG, Liechtenstein

The operation with D6 and D12 amplifiers

Operation with D6 and D12

	Q1 Qi1	Q7 Qi7	Q10 Qi10	Q-SUB QiCSA -SUB	Qi-SUB
Max. LS per channel	2	2	2	2	2
Max. LS per channel in special applications¹	3	3	3	3	3

Maximum loudspeakers per D6 or D12 channel

D6 and D12 controller settings

	Q1 Qi1	Q7 Qi7	Q10 Qi10	Q-SUB QiCSA -SUB	Qi-SUB
CUT	x	x	x		
HFC	x				
HFA		x	x		
CPL	x	x	x		
100 Hz				x	x
CSA				x	

D6 and D12 controller settings for each loudspeaker

CUT mode

Set to CUT, the cabinet low frequency level is reduced and is configured for use with d&b active subwoofers.

HFC mode

Selecting the HFC (High Frequency Compensation) mode compensates for loss of high frequency energy due to absorption in air when loudspeakers are used to cover far field listening positions. HFC should be used selectively, only for those cabinets covering distances larger than 50 m (160 ft). This enables the correct sound balance between close and remote audience areas, whilst all amplifiers driving the array can be fed with the same signal.

HFA mode

In HFA mode (High Frequency Attenuation), the HF response of the system is rolled off. The HFA provides a natural, balanced

frequency response when a unit is placed close to listeners in near field or delay use. High Frequency Attenuation begins gradually at 1 kHz, dropping by approximately 3 dB at 10 kHz. This roll off mimics the decline in frequency response experienced when listening to a system from a distance in a typically reverberant room or auditorium.

CPL function

The CPL (Coupling) function compensates for coupling effects between closely coupled cabinets by reducing the low and mid frequency level. CPL begins gradually at 1 kHz, with maximum attenuation below 400 Hz, providing a balanced frequency response when cabinets are used in arrays of two or more. The CPL function can be set in dB attenuation values between -9 and 0, or a positive CPL value which creates an adjustable low frequency boost around 65 Hz (0 to +5 dB).

100 Hz mode

If the 100 Hz mode is selected, the upper operating frequency of the system is reduced to 100 Hz. This setting allows the subwoofer to supplement top cabinets in full range mode.

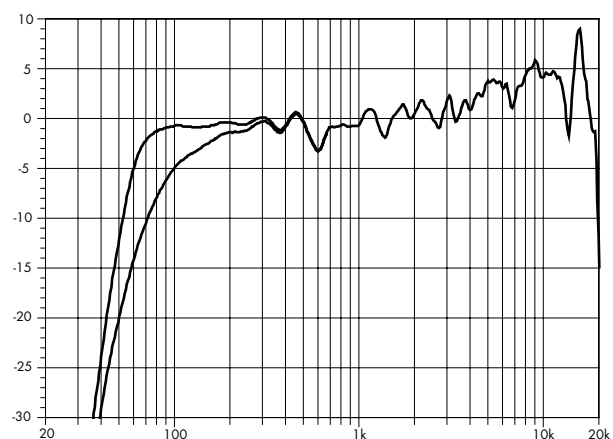
CSA mode

CSA (Cardioid Subwoofer Array) mode enables the combination of three or multiples of three subwoofer cabinets into an array that produces exceptional low frequency directivity control. The centre cabinet in a column is physically pointed to the rear and the CSA mode selected on the D6 or D12 channel that powers this cabinet. The forward facing cabinets are driven with a D6 or D12 channel set in the standard mode. The resulting cardioid behaviour of the array will significantly reduce the energy radiated to the rear. For further information please refer to the d&b TI 330 Cardioid Subwoofer Array, which is available for download at www.dbaudio.com.

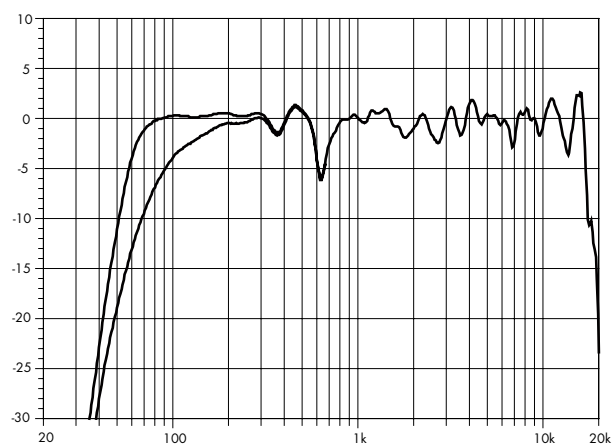
d&b SenseDrive

The D12 incorporates d&b SenseDrive for accurate control of LF drivers in d&b loudspeakers driven 2-Way Active or in d&b subwoofers driven actively, resulting in an extremely precise bass performance, even at high levels. SenseDrive is only available using a D12 fitted with EP5 connectors and appropriate 5-wire cabling. For further information please refer to the d&b TI 340 SenseDrive, which is available for download at www.dbaudio.com.

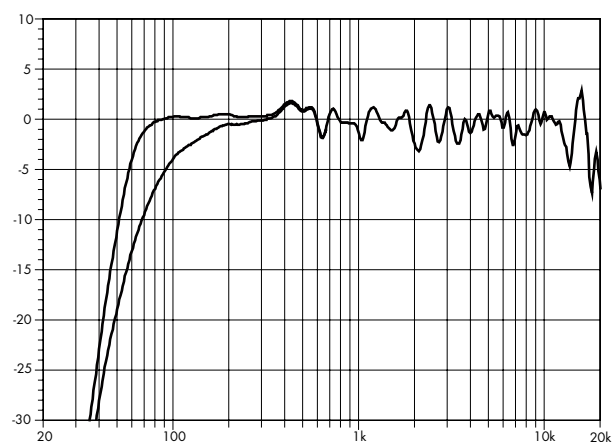
The Q-Series frequency responses



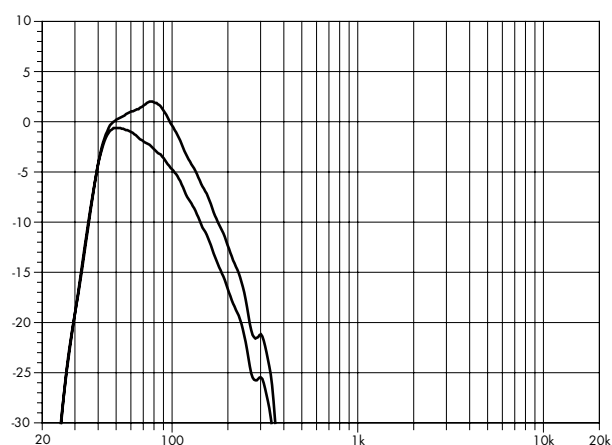
Q1 and Qi1 standard and CUT (single cabinet)



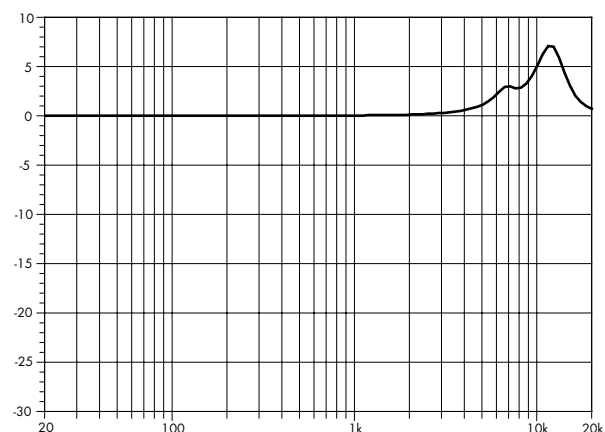
Q7 and Qi7 standard and CUT



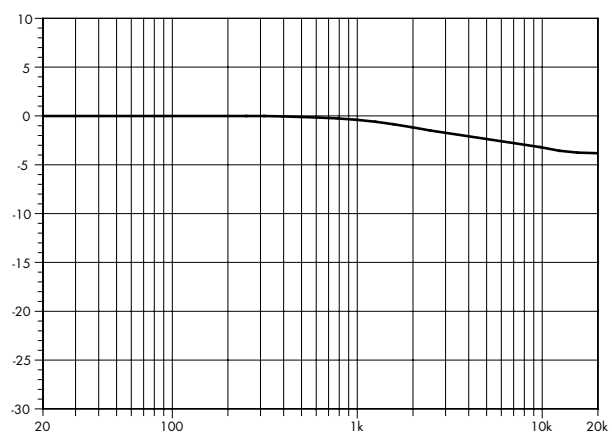
Q10 and Qi10 standard and CUT



Q, Qi and QiCSA-SUB standard and 100 Hz



Correction of HFC



Correction of HFA

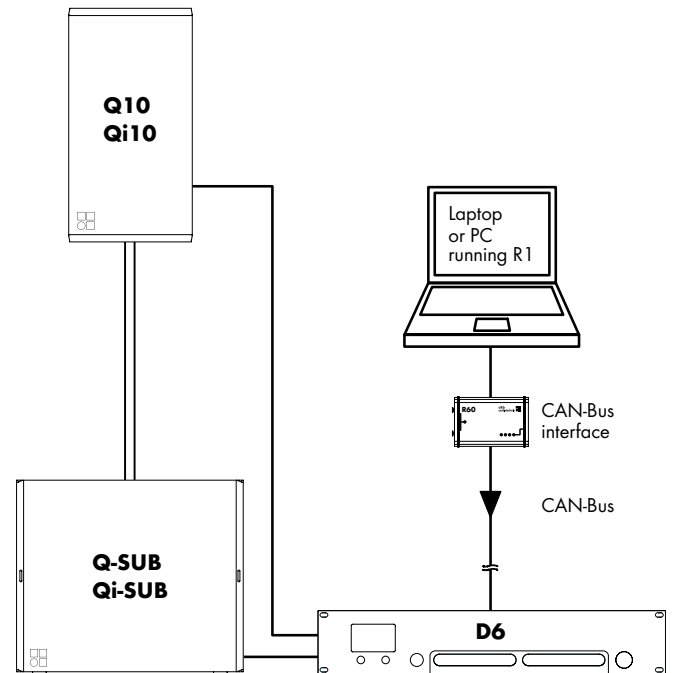
The Q-Series configuration examples

A small Q-Series line array configuration as shown on the opposite page could consist of two D12 amplifiers, three Q1/Qi1 loudspeakers, one Q7/Qi7 loudspeaker and four Q-SUBs/Qi-SUBs. Three Q1s/Qi1s are driven by one D12 channel and one Q7/Qi7 from the other, this total load is acceptable for one D12. The Q7/Qi7 is suspended horizontally with a rotated horn as a downfill and enlarges the vertical coverage in the near field. Four Q-SUBs/Qi-SUBs are driven by the second D12 amplifier.

A medium sized Q-Series configuration as shown on page 26 could consist of three D12 amplifiers and six Q1/Qi1 loudspeakers along with two subwoofer stacks comprising three Q-SUBs/Qi-SUBs and one QiCSA-SUBs in CSA mode. Two Q1/Qi1 loudspeakers are driven from one channel using three in total of the D12 channels. The forward facing Q-SUBs/Qi-SUBs are driven from two D12 channels set in the standard Q-SUB configuration. The rear facing Q-SUBs/QiCSA-SUBs are powered by the remaining D12 channel configured for Q-SUBs with the CSA mode selected. In small or medium sized configurations using music program material a one to one ratio of Q1/Qi1 to Q-SUBs/Qi-SUBs is recommended.

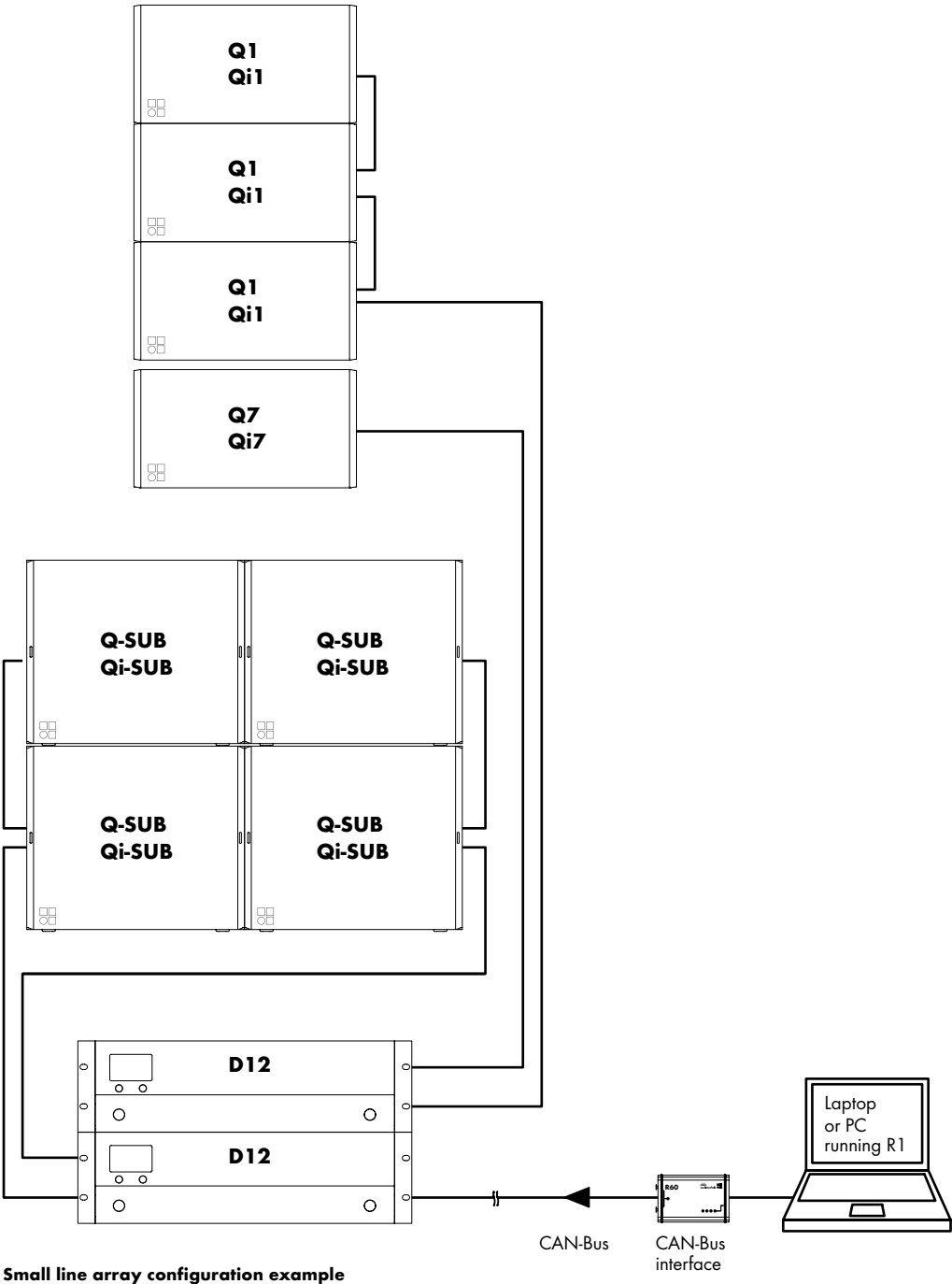
A large sized Q-Series configuration as shown on page 27 could consist of eight D12 amplifiers, sixteen Q1/Qi1 loudspeakers and two Q7/Qi7 loudspeakers along with two subwoofer stacks comprising twelve Q-SUBs or Qi-SUBs with the two middle cabinets in CSA configuration and one J-INFRA. All the Q1/Qi1 loudspeakers are driven by eight D12 channels, two Q7/Qi7 loudspeakers driven by one D6 amplifier are used to cover the near field. Eight forward facing Q-SUBs/Qi-SUBs are driven by four D12 channels set in the standard Q-SUB configuration, whilst the rear facing Q-SUBs/QiCSA-SUBs are driven by two D12 channels configured for Q-SUBs with the CSA mode selected. The frequency response below 40 Hz can be significantly enriched by the use of a J-INFRA subwoofer driven from one D12. As the horizontal constant directivity of a Q1/Qi1 column is maintained down to 400 Hz, two columns of Q1s/Qi1s can be arrayed side by side to provide wider horizontal coverage. A horizontal angle of 50° between two columns provides the best compromise between level and frequency response. The two Q7s/Qi7s are used to cover the near field providing sufficient coverage and level.

For further information please refer to the TI 385 d&b Line array design, which is available for download at www.dbaudio.com.

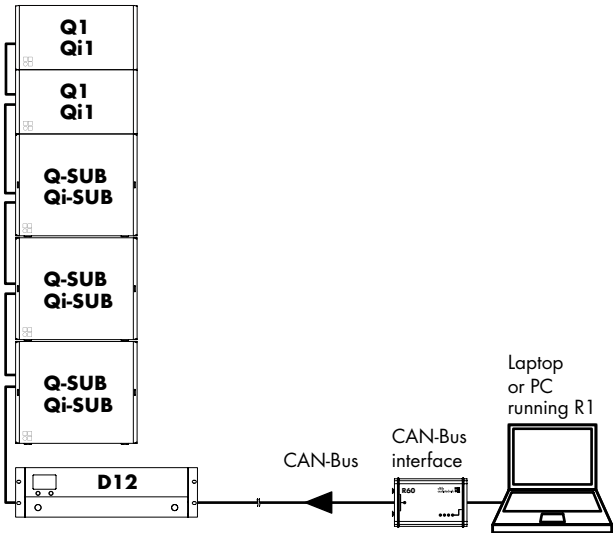


Small basic configuration example

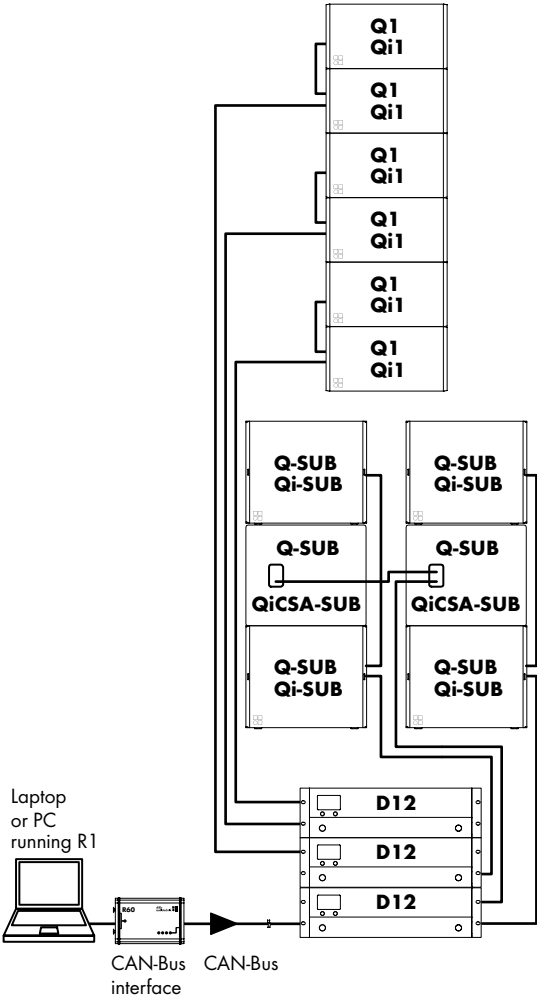
The Q-Series configuration examples



The Q-Series configuration examples

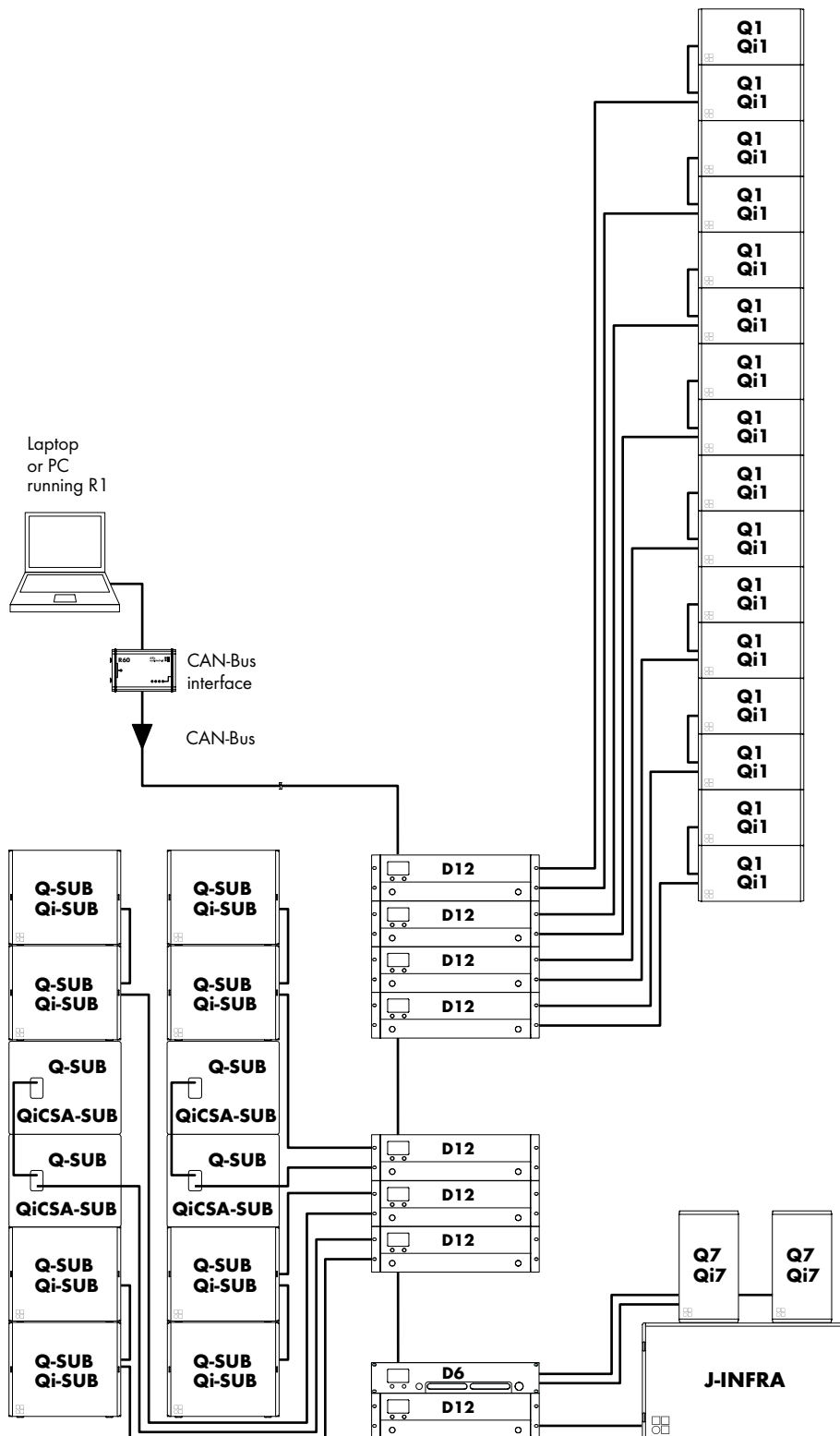


Small ground stacked configuration example



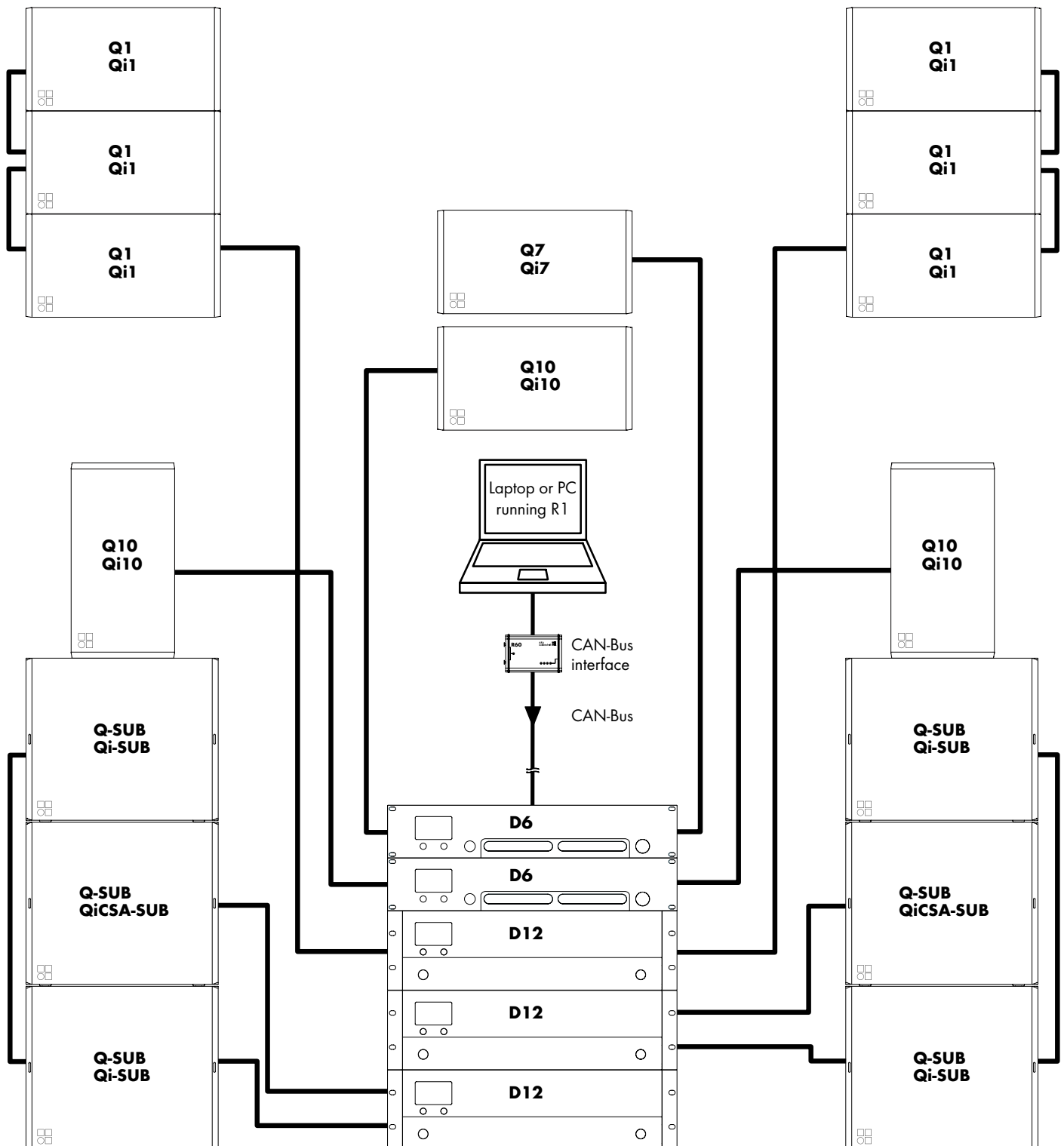
Medium flown and ground stacked example

The Q-Series configuration examples



Large flown and ground stacked configuration example

The Q-Series configuration examples



Q1/Qi1 flow line arrays in left/right configuration with Q7/Qi7 and Q10/Qi10 centre cluster, Q10s/Qi10s as fills and ground stacked Q/Qi-SUBs and QiCSA-SUBs

The Qi loudspeakers Weather Resistant and Special Colour options

The Weather Resistant and Special Colour options are only available to order with the Qi version cabinets.

Weather Resistant (WR) option

The WR option enables operation of loudspeakers in changing ambient conditions, however it is not intended to enable permanent, unprotected operation of loudspeakers outdoors. Cabinets being used outdoors even with the WR option should always be aimed either horizontally or with a downward tilt. The QiCSA-SUB should only be aimed horizontally. An additional cover should be positioned over the loudspeakers.

Qi loudspeakers with the Weather Resistant option are supplied with a fixed cable. Cable type H-07-RN-F 2 x 2.5 mm²/AWG 13 with a length of 5.5 m (18 ft) as standard or length as required.

Special Colour (SC) option

The paint finish of all loudspeaker cabinets and most accessories can be executed in almost all RAL colours in accordance with the RAL colour table. Items such as chains, fixing screws, shackles, eyebolts and screws are not painted. Other paint finishes such as metallic are available on request. The acoustically transparent foam fitted behind the rigid metal grill is also painted with the requested RAL colour.

The D6 and D12 amplifiers installation

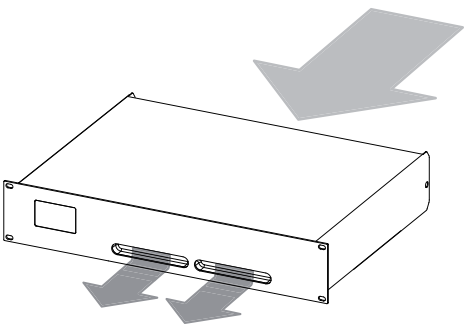
The diagram opposite shows the thermal operating range within which the technical data will be maintained. The operation beyond this range is possible for a short time but for thermal reasons this may trigger the amplifier protection circuit for thermal overload.

The D6 and D12 amplifier enclosures are designed to fit a standard 19" equipment rack or cabinet.

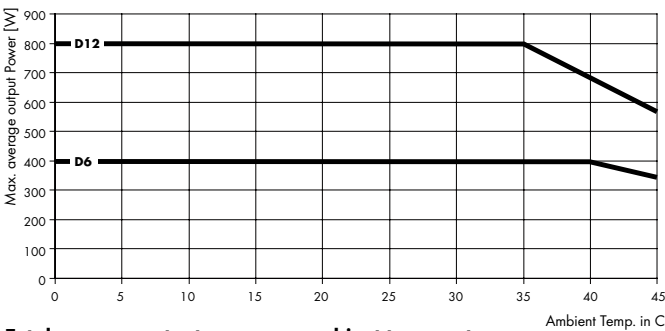
When specifying a rack, be sure to allow extra depth (10 cm /4" is usually sufficient) to accommodate the cables and connectors at the rear of the amplifier(s). When mounting amplifiers into a 19" rack cabinet, provide additional support using shelves fixed to the inner sides of the cabinet or the mounting holes provided on the amplifier rear mounted rack ears; do not just rely on fixing and supporting amplifiers by their front panels.

Since the amplifiers can generate a lot of heat, please ensure, whatever the mounting or racking arrangement, that adequate cool airflow is provided to avoid a build-up of hot air inside the rack leading to overheating. When setting up the amplifier, do not block or cover the rear panel air intake or the vents on the front panel of the amplifier.

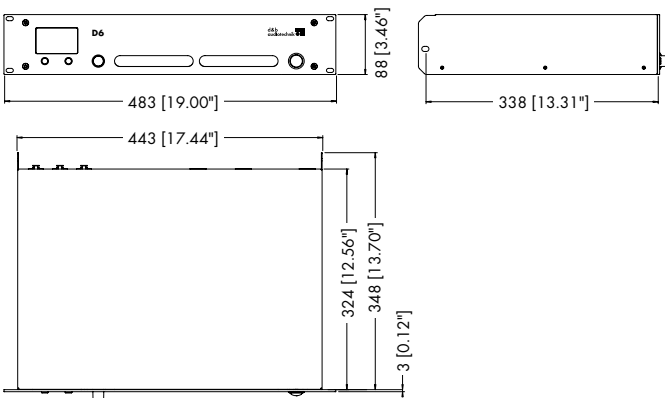
If amplifiers are installed in cabinets so that direct access to the rear panel filters is not possible, we recommend using additional fan modules with front mounted filters that can be easily replaced without opening the sealed cabinets.



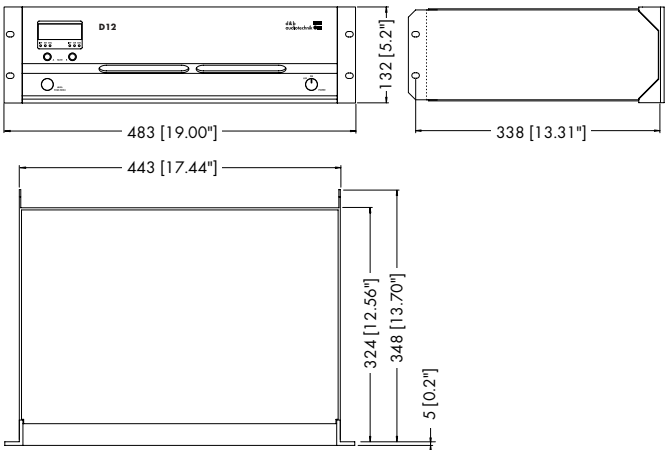
Airflow



Total average output power vs. ambient temperature



D6 enclosure dimensions in mm [inch]



D12 enclosure dimensions in mm [inch]

The D6 and D12 amplifiers

power consumption and power loss

D6 and D12 power consumption and power loss

The power required from the mains supply and the waste heat produced by the amplifier power loss vary depending on the load impedance and the signal levels and characteristics (e.g. speech, music). In practice, the theoretical peak power consumption of a system will only be sustained for a short period of time. Basing mains current and air conditioning plant requirements on the peak power consumption of the sound system would result in a generously overspecified installation. The key factor in power consumption calculations is the crest factor of the music or speech signal - the ratio of peak to sustainable RMS voltage of the signal. The table below gives power figures for various types of signal waveforms.

Mains supply

Maximum number of devices per phase conductor when full output power is required:

Mains supply	Maximum number	
	D6	D12
230 V/16 A	4	2
115/100 V/15 A	2	1

In the USA and Japan we recommend the operation over two phase conductors (phase to phase – 240/200 V) or the use of mains leads with a much higher cross section.

Signal waveform	CF	Duty	P _{out} [W]	P _{in} [W]	P _{loss} [W]	I _{in} [A]	U _{in} [V]
Sine wave	1.4	1/1	1200	1560 1645 1715	360 445 515	6.8 14.3 17.2	230 115 100
Highly compressed music ¹	2.4	1/3	400	520 550 570	120 150 170	2.3 4.8 5.7	230 115 100
Music with low dynamic range	4.0	1/8	150	215 220 220	65 70 70	1.0 2.0 2.2	230 115 100

D6 Power balance

Signal waveform	CF	Duty	P _{out} [W]	P _{in} [W]	P _{loss} [W]	I _{in} [A]	U _{in} [V]
Sine wave	1.4	1/1	2400	3480	1080	20.6 ² 41.2 ² 47.4 ²	230 115 100
Highly compressed music ¹	2.4	1/3	800	1230	430	9.2 18.4 ² 20.2 ²	230 115 100
Music with low dynamic range	4.0	1/8	400	640	240	5.3 10.6 11.2	230 115 100

D12 Power balance

Key:

CF: Crest factor, **Duty:** Duty cycle, **P_{out} [W]:** Max. average output power (sum of both channels), **P_{in} [W]:** Input power (effective power)
P_{loss}: Power loss (thermal power), **I_{in} [A]:** Resulting current, **U_{in} [V]:** Mains voltage

¹ Maximum practicable operation

² Only in conjunction with appropriate mains power supply installation

The d&b Remote network

d&b Remote network

The d&b Remote network enables central control and monitoring of a complete d&b loudspeaker system from anywhere in the network, be it from a PC in the control room, at the mix position, or on a wireless tablet PC in the auditorium.

This central access to all functions, controls and detailed system information unlocks the full potential of the d&b system approach. Extensive monitoring and diagnostics enable detailed examination of the system performance. Control can be undertaken on individual loudspeakers, on multiple groups of loudspeakers or formed into groups that address the complete system.

The flexibility and scalability of this approach, coupled with the inclusion of several types of interfaces, allow the d&b Remote network to be deployed to address the differing control and monitoring requirements in a broad variety of mobile and installed applications, regardless of their size.

In mobile applications, system engineers may use the remote network to verify and tune the system. System check and device diagnostics enable detailed monitoring as and when required, before, during, or after a show.

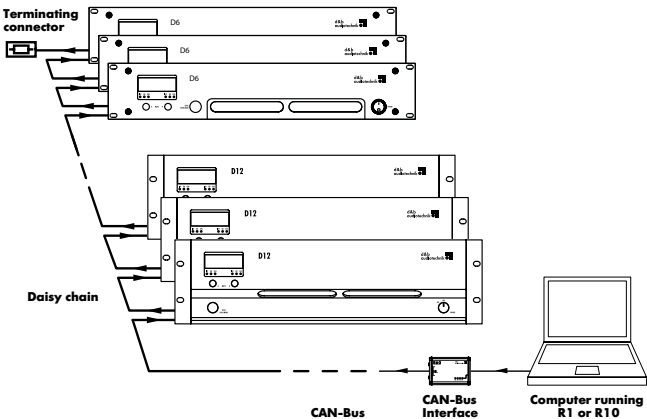
In installation projects system integrators can configure the remote network to offer access to different levels of control tailored to the operational demands. For example, simplified functionality for daily use and more complex functionality when multiple applications are required within one installation. Input and Load monitoring coupled with automatic error messages allow installation operators to ensure the optimum performance at all times.

d&b Remote interfaces

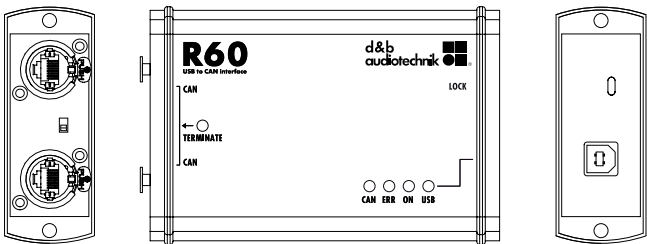
Every d&b amplifier is fitted with a Remote interface for the Controller Area Network (CAN) Bus. Each D6 and D12 has two REMOTE connectors (RJ 45) to enable the CAN-Bus signal to be daisy chained through them. A simple d&b Remote network application consists of a computer running R1 Remote control software, an R60 USB to CAN interface, CAT 5 shielded twisted pair cable with shielded RJ 45 connectors and d&b D6 or D12 amplifiers.

Up to five R60 USB to CAN interfaces can be operated with one computer running R1, while a maximum of 504 amplifiers can be incorporated into one application. The maximum bus cable length of a d&b Remote network is 600 metres, see the adjoining table for cable length examples. The R70 Ethernet to CAN interface can be used for applications over longer distances, in conjunction with a fibre optic network for example.

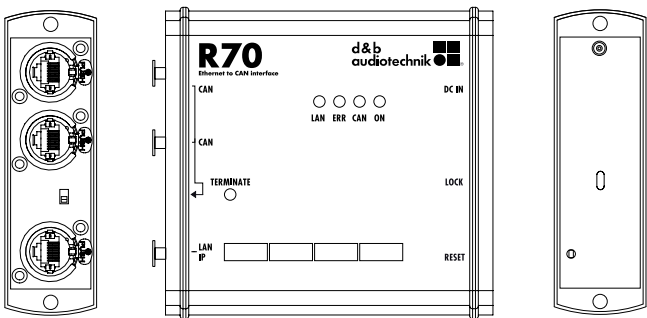
For further information about CAN-Bus cabling requirements and interfaces please refer to the d&b TI 312 d&b Remote network, which is available for download at www.dbaudio.com.



d&b Remote network



Z6118 R60 USB to CAN interface



Z6124 R70 Ethernet to CAN interface

Cable cross section	Maximum bus cable length with numbers of amplifiers	
	32	100
0.25 mm ² (24 AWG)	180 m (600 ft)	140 m (460 ft)
0.75 mm ² (18 AWG)	500 m (1650 ft)	330 m (1100 ft)

Examples of bus cable length

The d&b Remote software

R1 Remote control software

R1 Remote control software is a graphical drag and drop user interface enabling the construction of a screen based virtual control surface for d&b systems, using the d&b Remote network. All major features, functions and controls available on the front panel of the D6 and D12 amplifiers may be remotely controlled and/or monitored using R1. The architecture of R1 allows control of each channel of the amplifier as a single entity and enables the creation of groups of loudspeakers in as little, or as much detail as required by the user. When grouped together, a button or fader can control the overall system level, zone level, equalization and delay, power ON/OFF, MUTE and loudspeaker function switches such as CUT/HFA/HFC or CPL.

R1 has extensive facilities for storing and recalling system settings allowing these to be repeated, as and when required. It is easy to adjust R1 project files for use with a different set of equipment at another location. Password protection is available to restrict access.

R1 runs on PCs operating Microsoft Windows XP SP3/Vista SP1/7¹. A virtual machine enables R1 to run on the newer Intel² Mac³ in parallel to the Mac OS³ X, using the Windows driver for R60 USB to CAN interface.

For older, Power PC based Mac computers, Windows emulation needs to be used, together with the R60 driver for Mac/PPC. For R70 Ethernet to CAN, no driver is needed.

All the latest available drivers, R1 example files that can be used as templates and the TI 391 describing the effective use of R1 are available for download at www.dbaudio.com.

R10 Service software

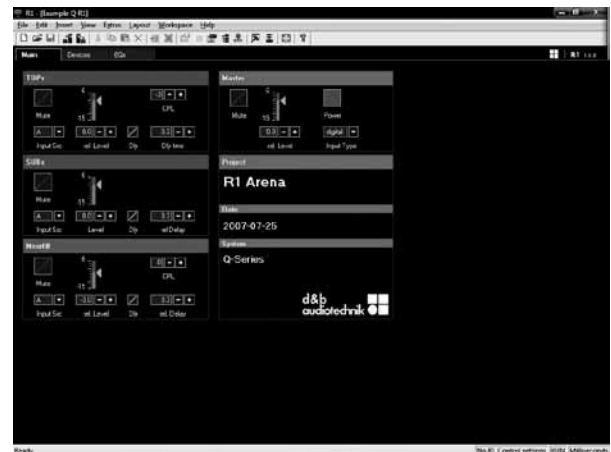
R10 Service software enables the simultaneous firmware update of multiple amplifiers from a central location. Using R10, AmpPresets can be adjusted to the application requirements.

Integration with media control

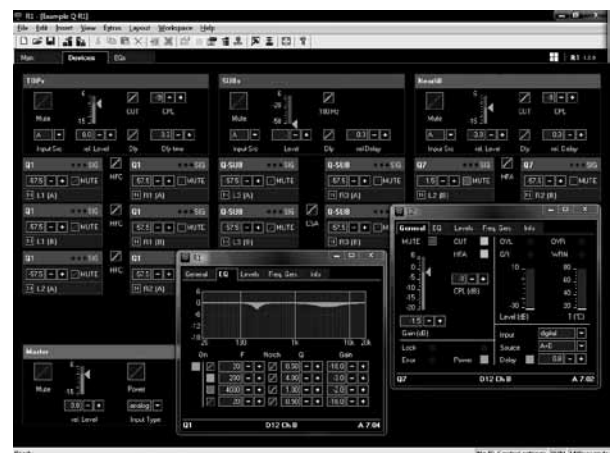
For integration of d&b audiotechnik loudspeaker systems into media control applications, the R70 Ethernet to CAN interface is used. Media control modules (drivers) are available at www.dbaudio.com.

EN 60849 voice alarm applications

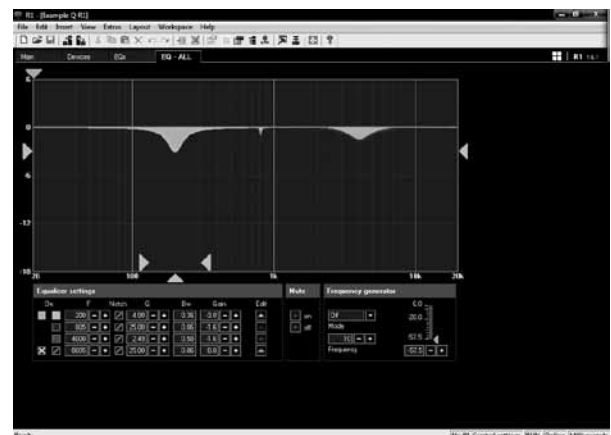
For remote control of voice alarm applications Programmable Logic Controllers (PLCs) can be integrated into the d&b Remote network.



R1 main page, groups and master controls



R1 device page, individual devices, details view and group controls



R1 equalizer page

¹ Microsoft and Windows XP/Vista/7 are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries

² Intel is a trademark of the Intel Corporation in the United States and other countries

³ Mac and Mac OS are trademarks of Apple Inc., registered in the United States and other countries

The Q-Series product overview

	Code	Description
Q loudspeakers	Z0501.xxx	Q1 Loudspeaker * ¹
	Z0507.xxx	Q7 Loudspeaker *
	Z0508.xxx	Q10 Loudspeaker *
	Z0510.xxx	Q Subwoofer *
* Connector options	Zxxxx.000	EP5 connector
	Zxxxx.001	NL4 connector
	Zxxxx.002	NLT4 F/M connector
Qi loudspeakers	Z0521.000	Qi1 Loudspeaker NL4 connector
	Z0527.000	Qi7 Loudspeaker NL4 connector
	Z0528.000	Qi10 Loudspeaker NL4 connector
	Z0530.000	Qi Subwoofer NL4 connector
	Z0531.000	QiCSA Subwoofer NL4 connector
		WR Weather Resistant option ²
		SC Special Colour option ³
Amplifiers	Z2700.000	D6 Amplifier NL4 (85 - 285 V)
	Z2600.000	D12 Amplifier EP5 (115/230 V)
	Z2600.001	D12 Amplifier NL4 (115/230 V)
	Z2600.300	D12 Amplifier EP5 (100/200 V)
	Z2600.301	D12 Amplifier NL4 (100/200 V)
Remote network	Z3000.000	R1 Remote control software ⁴
	Z3001.000	R10 Service software ⁴
	Z6118.000	R60 USB to CAN interface
	Z6124.000	R70 Ethernet to CAN interface
	Z6116.000	RJ 45 M Terminator
	Z6122.000	Bopla mounting clamp
	Z6123.000	Bopla mounting clamp upright
Cables	Z2298.xxx	MC2.5SD Cable EP5 various length
	Z2299.xxx	MC2.5 Cable NL4 various length
	Z2296.000	Extension adapter NL4
	K3118.000	MC2.5SD Cable unterminated
Racks	E7211.000	Touring rack 2 RU, 19" DD, shock mounted, handles
	E7419.000	Touring rack 3 RU, 19" DD, shock mounted, handles, window
	E7420.000	Touring rack 6 RU, 19" DD, shock mounted, handles, window, wheels
	E7424.000	Touring rack 9 RU, 19" DD, shock mounted, handles, window, wheels
Cases	E7430.000	Touring case 2 x Q1 / Q7 / Q10 wheels
	E7431.000	Touring case 3 x Q1 / Q7 / Q10 wheels
	E7432.000	Touring case 2 x Q1 / Q7 / Q10 wheels, Z5150 Q Swivel bracket, tray
	E7433.000	Touring case 2 x Q Flying frame wheels, flexible cable store, 2 trays

¹ supplied including Z5154 Q Rigging set

² WR only for Qi loudspeakers, on request

³ SC only for Qi loudspeakers, on request

⁴ available as a download at www.dbaudio.com

The Q-Series product overview

	Code	Description
Lids	E7921.000	Q-SUB Wooden lid
Q accessories	Z5154.000	Q Rigging set (supplied with Q1 includes 2 x Z5151, Z5152 and 4 x Z5153)
	Z5151.000	Q Splay link
	Z5152.000	Q Front link
	Z5153.000	Locking pins 8 mm (linked in pairs with steel wire)
	Z5159.000	Q Flying frame
	Z5160.000	Q Load adapter
	Z5150.000	Q Swivel bracket
	Z5156.000	Q Flying adapter
	Z5048.000	Flying pin 10 mm
Qi accessories	Z5145.000	Ci/Qi Mounting frame ²
	Z5170.000	Qi Mounting adapter ^{2, 5}
	Z5171.000	Qi Mounting plate ^{2, 5}
	Z5172.000	Qi-SUB Mounting plate ^{2, 5}
	Z5054.000	Ci60/Ci90 Flying adapter ²
	Z5053.000	Ci60/Ci90 Bracket connector
Q/Qi accessories	Z5161.000	Q Flying bracket ²
	Z5175.000	Qi Horizontal bracket
	Z5044.000	MAX Bracket connector ⁵
	Z5020.000	Flying adapter 02 ²
	Z5025.000	Flying adapter 03 ²
	Z5015.000	TV spigot for flying adapter 02
	Z5010.000	TV spigot with fixing plate
	Z5147.001	Rota clamp
	Z5012.500	Pipe clamp for TV spigot
	Z5024.000	Loudspeaker stand adapter
	Z5009.000	Loudspeaker stand with winder
	Z5013.000	Loudspeaker stand winder M20
	Z5155.000	Q Hoist connector chain (supplied with 2 x E6507 1t Shackles)
	E6507.000	1t Shackle
	Q9032.000	Safety eyebolt M10
Misc.	Z5060.000	Anti-slip coating 1 kg /2.2 lb
	Z5061.000	Standard cabinet paint 1 kg /2.2 lb

² SC on request

⁵ supplied in pairs

